Catalogue 2010

Preface

DEAR READER!

You will understand that we as manufacturers of air heating and ventilation systems are proud of our product. Of course we love to see you successfully install our product. We have compiled this catalogue to a help you as much as possible. The catalogue also lists the distributed products that were marketed under the brandname Innosource until the end of 2009. In this booklet you will find all information you need - with your expertise - to order the correct product or system. Here you will find the answer to almost all your questions. If not, please contact our Sales Department or one of our consultants.
Our people will be happy to serve you.

CLIMATE OK

In dwellings and non-residential buildings, the systems by Brink Climate Systems B.V. contribute to a healthy, low-energy and comfortable indoor climate. It will be obvious that our products satisfy the highest quality requirements. But we want more. That's why we are launching Climate OK. Climate OK is an initiative by Brink Climate Systems to arouse more interest for the quality of the indoor climate among architects, developers, installers and end users.

FROM MANUFACTURING TO ASSEMBLY

At Brink Climate Systems, member of the Centrotec Group, equipment and parts are expertly and efficiently designed and produced in-house. Ventilation units and air heaters by Brink Climate Systems are available in many capacities and versions, including the necessary accessories.

All components are prefabricated and perfectly geared for each other, making assembly effortless. You will find Brink Climate Systems applications anywhere: in dwellings, bungalows, offices, health centres, sports centres, schools, workshops, showrooms and production halls.

INSTALLATION CONCEPTS

In addition to separate applications for heating and cooling, ventilating and domestic hot water, Brink also supplies installation concepts. These complete solutions offer a healthy, durable and low energy living and working climate so they fit in closely with present-day comfort requirements among end-users.

QUALITY

The appliances and parts are of the highest quality, subject to continuous inspection throughout the production process, and they come with the CE mark. In addition, our appliances have a high efficiency. Brink Climate Systems B.V. is certified under ISO 9001 and ISO 14001.

SUPPORT

Do you need support when making a design? Then call the people of our Export Department. They will give you advice and come up with ideas for an optimum solution for any installation.

Any questions? Please, do not hesitate to contact our Sales Department, phone +31 522 46 99 44.

Kind regards,
Brink Climate Systems B.V.

Johan van Renselaar, managing director

kiwa gecertificeerd ISO 9001 KWALITEIT
kiwa gecertificeerd ISO 14001 MILIEU

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1.1 New Sonair

GENERAL INFORMATION

THE NEW SONAIR

The completely renewed Sonair is a wall ventilation appliance for use in high-noise environments such as near airports, railways or busy motorways. The air supply unit Sonair has a number of major innovations such as the fan unit which is integrated in the wall sleeve. The installed fan (with EC technology) guarantees a low energy consumption. Since the fan remains outside the room, the system noise is limited and the design indoor part is compact. Other important characteristics include the user-friendliness through the high-quality air filters and push buttons. With this appliance Brink Climate Systems anticipates on the recently set ceilings for maximum noise quantities that road and rail traffic may cause.

In addition to application in high-noise environments, of course the new Sonair is also suitable for quickly and simply improving the ventilation in other existing situations.

PRODUCT PROPERTIES AND BENEFITS

The new Sonair has the following product properties and benefits:

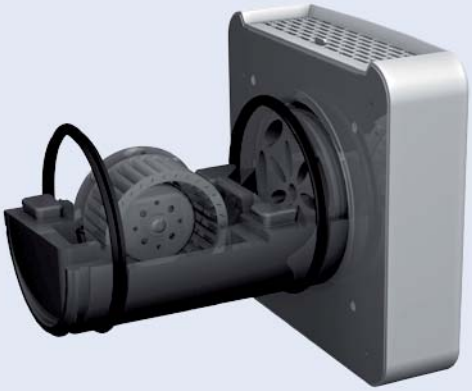
- The fan unit is integrated in the wall sleeve
- Low-energy EC fan
- High noise reduction through the exterior wall
- Possibility for (high-performance) air filtering
- Very simple installation
- Choice of front finishes

AVAILABILITY

The new Sonair is available as from the third quarter of 2010.

SONAIR

SONAIR



1.2 Breathing Window

GENERAL INFORMATION

THE BREATHING WINDOW APPLIANCE

In 2010 Brink Climate Systems introduces the revolutionary Breathing Window. The Breathing Window is a distributed wall ventilation system with heat recovery and optional demand-controlled ventilation. A special feature is the highly compact flat heat exchanger containing fine copper wire. Application of this type of heat exchanger has made it possible to develop a compact wall ventilation unit.

EPC GAINS

The Breathing Window makes it possible to achieve EPC gains up to 0.32. Because the Breathing Window does not require long air ducts, it is excellently suitable for renovation of existing dwellings and buildings. Also in new buildings, a Breathing Window contributes to improving the energy label (for instance in dwellings, offices, hotels and health centres).

PRODUCT PROPERTIES AND BENEFITS

The Breathing Window has the following product properties and benefits:

- Compact dimensions through use of high-efficiency fine copper wire heat exchanger
- Fans integrated in the wall sleeve make for an extremely low sound level
- CO_2 sensor-based automatic control
- Simple installation makes it suitable for new projects and existing buildings alike
- Choice of front finishes

AVAILABILITY

The Breathing Window is available as from the third quarter of 2011.

BREATHING WINDOW

1.3 Renovent Excellent

GENERAL INFORMATION

RENOVENT EXCELLENT

Brink Climate Systems developed further the familiar Renovent HR for balanced ventilation with heat recovery and equipped it with the latest technology; the Renovent Excellent. The appliance has a capacity of 400 m^3/h. The heat exchanger is broader for improved heat transfer and a lower pressure drop.

VERSIONS

The Renovent Excellent is available in three versions:

A: Four air connections at the top (4b).

B: Two connections at the top and two connections at the bottom (2b/2o).

C: Three connections at the top and one connection at the bottom (3b/1o).

The appliances are available in a right-handed or left-handed version.

COMPLETE NEW CONTROL SYSTEM

The ease of operation of this state-of-the-art control system has been optimised. The electric rated power has been reduced by installing efficient fans in combination with constant flow rate control. This control ensures that the required flow rate is actually realised at changing duct pressures.

FILTERS

The appliance comes as standard with a G3 filter (F7 supply filter optional). The filters are easily taken out. Of course this appliance also has the familiar filter indication. On the basis of time or volume the indication appears on the display, on the 3-way switch with LED indication and, if installed, on the control panel for demand-controlled ventilation.

PARTS

The new appliance has many functionalities as standard. A bypass diffuser and an intelligent preheater are standard. The internal resistance has been reduced to realise a low sound level and a low energy consumption. The bypass is activated when the preconditions are met and it ensures that the indoor air is not unnecessarily heated under summary conditions. If necessary, the preheater heats up the outdoor air to prevent the heat exchanger from freezing at low outdoor temperatures. It is activated when the exchanger starts to freeze up. That guarantees optimum balanced ventilation under all conditions.

AVAILABILITY

The new Renovent HR is available as from the second quarter of 2011.

RENOVENT EXCELLENT

1.4 Brink Sun Set

GENERAL INFORMATION

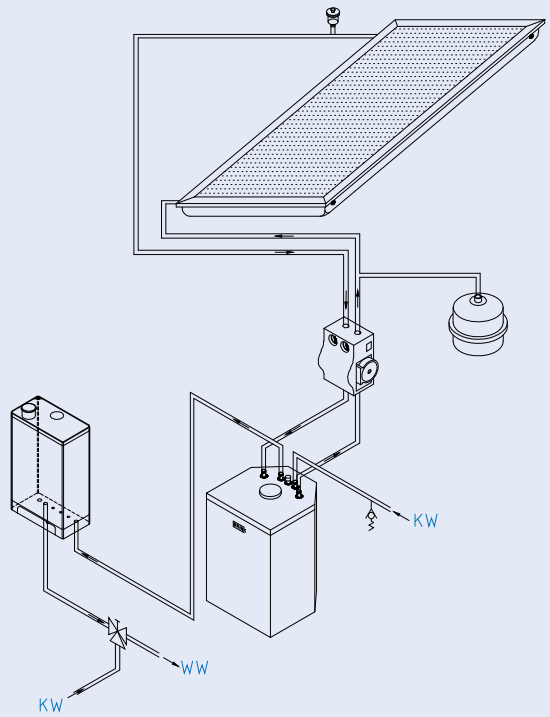
BRINK SUN SET

In cooperation with German sister company Wolf Heiztechnik Germany, B developed a completely new line of solar water heater systems, the Brink Sun Set. The Brink Sun Set comes in three standard sets, including solar water heaters with capacities of 115, 200 and 300 litres. In addition to these standard sets, Brink also offers made-to-measure solutions. Brink offers a complete range of accessories so there is a fitting solution for any situation. The three standard versions are suitable for single households up to households of four tot six.

PARTS

Every Brink Sun Set features unique solar thermal collectors that are excellently suitable for the European climate. The use of special glass guarantees a high efficiency, also in the European climate.

BRINK SUN SET



Basic diagram Brink Sun Set central heating 1-115

Every Brink Sun Set is composed of the following parts:

- Solar thermal collector Top Son F3-1
- Sealing plug set
- Couplings pump group 4 x 22 mm
- Collector connectors (if necessary)
- Pump group 10, with high head
- Expansion vessel
- Connecting kit
- Flexible connecting kit
- Solar water heater
- Manual bleeder
- ANRO fluid, KIWA approved
- Controller, SM1
- Mixing valve

VERSIONS

As stated above, the Brink Sun Set comes in three standard versions.

A: Sun Set CV 1-115, with one solar thermal collector and one 115-litre solar water heater.

B: Sun Set CV 2-200, with one solar thermal collector and one 200-litre solar water heater.

C: Sun Set CV 3-300, with three solar thermal collectors and one 300-litre water heater.

1.5 New Allure

GENERAL INFORMATION

THE NEW ALLURE

Brink Climate Systems developed the familiar Allure series further. Three new appliances have been added to the range. The appliance B-16 HR is available with three different air flow rates and a B-25 HR with two different air flow rates. That way the appliance can be tuned even better to the installation, more air for cooling capacity, without a too great heating capacity.

The new Allure has a new burner controller. The controller complies with the latest requirements and uses less energy. This has been combined with a new operating system with a graphic display for improved tuning and reading out of the appliance. In addition, a new room thermostat has been developed. This beautifully designed clock thermostat with display is easily operated, with a time program (clock function) as well as by manual control.

VERSIONS

The new Allure is available in six versions in Upflow as well as Downflow.

A: B-16 HR with 1350 m^3/h

B: B-16 HR with 2100 m^3/h

C: B-16 HR with 3400 m^3/h

D: B-25 HR with 2100 m^3/h

E: B-25 HR with 3400 m^3/h

F: B-40 HR with 3400 m^3/h

NEW CONTROL SYSTEM

The new control system and the operation of the new Allure are fully in line with the state-of-the-art and ease of operation.

AVAILABILITY

The new Allure is available as from the second quarter of 2010.

2 Installation concepts

2.1 Introduction

GENERAL INFORMATION

EPC REDUCTION

It requires ever more installation engineering measures to further reduce the energy consumption in dwellings. The intention is to reduce the EPC for newly built dwellings even further in 2011, with the eventual target of developing energy-neutral dwellings in 2020.

TOTAL SOLUTION

The measures that must be implemented cannot be realised by just one product. That increasingly becomes a joint effort between building physics and total installation engineering solutions.

BRINK CLIMATE SYSTEMS ELIMINATES YOUR WORRIES

Brink Climate Systems is your partner of choice with regard to installation solutions. For new projects, but expressly also for existing buildings, Brink Climate Systems developed installation concepts to actually realise the various savings targets. Is the focus on CO_2-emission, or is it all about the energy costs for the end user? We have the right solution. Our consultants can provide advice during the development process.

We are happy to consult with the client on the energetic and comfort requirements made upon the dwelling(s). When the wishes have been defined, Brink Climate Systems can take care of the right system choice, with or without the required technical specifications and starting points for the building-physical characteristics of the dwelling(s).

CLIMATE OK

In addition to energy efficiency, realising sufficient quality is another requirement. With 'Climate Ok' by Brink Climate Systems we can map out the quality aspects considered important by the residents and make them a subject of discussion, but more importantly, we can guarantee them.

2.2 Examples installation concepts

GENERAL INFORMATION

Brink Climate Systems offers installation concepts in the field of solar energy, ventilation, heating, cooling and hot water. Installation concepts require customised advice. Brink Climate Systems makes it possible to go through the entire process, from calculation up to and including realisation.

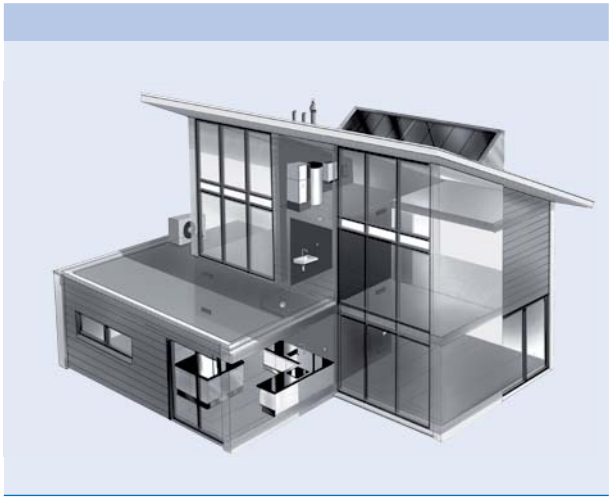
The following examples give you an idea of the options that Brink Climate Systems can offer with respect to the various total installation solutions. The various examples are only indicative. Of course other combinations of systems are possible. Every system has its own solution.

2.2.1: Brink Ventilation and solar concepts for dwellings

2.2.2: Brink Passive House concept

2.2.3: Brink BQLS concept

2.2.4: Brink School Ventilation concepts



2.2 Examples installation concepts

2.2.1 VENTILATION AND SOLAR CONCEPT FOR DWELLINGS

In many cases, installation concepts are not standard. For every situation it is assessed what the most favourable energetic solution is. But it is not only about the energetically most favourable solution. The balance between investment costs, EPC reduction and a good mutual match between the separate products is another consideration. Yet in for instance renovation projects is often possible to use a standard solution despite the diversity of the individual dwellings. To facilitate that, for instance in the field of solar systems Brink Climate Systems developed three different standard systems, known as Brink Sun Set. In combination with the various ventilation solutions offered by Brink Climate Systems, great steps can be made in various disciplines. In new projects, municipalities and housing corporations set great store by the EPC value, but they also have other ambitions, such as with regard to CO_2- emission.

CERTIFICATE OF EQUIVALENCE

Certificates of equivalence are available for all solar and ventilation concepts. This certificate is awarded after a test by an independent body. The tests were carried out at a consumption of 110 l/day, 15 °C => 60°C:

- Determining the energetic efficiency of the heat recovery appliance 'Brink Renovent HR 4/0 R Small' Measuring Certificate under NEN 5138:2004
- Determining the energetic efficiency of the heat recovery appliance 'Brink Renovent HR 4/0 R Medium' Measuring Certificate under NEN 5138:2004
- Determining the energetic efficiency of the heat recovery appliance 'Brink Renovent HR 4/0 R Large' Measuring Certificate under NEN 5138:2004
- Annual efficiency solar water heater Brink Sun Set CV 2-200 with capped top heat exchanger for NEN 5128:2004
- Annual efficiency solar water heater Brink Sun Set CV 3-300 with capped top heat exchanger for NEN 5128:2004

The certificates of equivalence are available at www.brinkclimatesystems.nl

EXAMPLES: EPC REDUCTION

Example A: Sunset CV 3-300 with Renovent HR. Every Brink Sun Set supplied by Brink Climate Systems is a complete solar water heater system. The series is composed of three systems:

1. The Sun Set CV 1-115 with its compact dimensions is excellently suitable for renovation and new projects.
2. The Sun Set CV 2-200 is a perfect choice for dwellings were the water demand is higher, through application of a collector area of some 4.6 m^2 and a 200 litre solar water heater.
3. The Sun Set CV 3-300 is commonly used in dwellings occupied by more than four or were the water demand is very high. The 300 litre solar water heater in combination with the solar thermal collectors ensures a very high yield. Both the energy savings and the reduction of CO_2-emissions are guaranteed with these carefully composed sets. Savings in gas for hot domestic water may increase to as much as 60%. This standard set has a major influence on the EPC.

By way of supplement with regard to ventilation in new projects, Brink Climate Systems can also supply customised ventilation systems. The Renovent HR heat recovery unit ensures a continuous supply of fresh air in the dwelling and it comes in three versions. Four connections at the top, two connections at the top and two at the bottom, and three connection at the top and one at the bottom. Every situation requires its own appliance. The major EPC savings from application of the Renovent HR and the combination with a Brink Sun Set make it possible to realise very low EPC values.

Example B: The Breathing Window and the Advance. The Breathing Window and the Advance are excellently suitable to ventilate one habitable room. Both products are also the perfect choice as the heart of a complete dwelling ventilation system. Application of the Breathing Window or the Advance for instance in the living room (where heat recovery is often desired for reasons of comfort) combined with for instance mechanical exhaustion in the wet rooms and air supply with grilles in the other habitable rooms (bedrooms) results in an excellent ratio between EPC reduction and investment. The EPC can be reduced even further through the use of solar water heater system by Brink Climate Systems. As a starting point, the Sun Set CV 2-200 has been selected for the following example. This combination is excellently suitable for a dwelling occupied by four.

EPC GAINS	
Example A: Sun Set CV 3-300 and Renovent HR	0.04*
Example B: Sun Set CV 2-200, Breathing Window and Advance	0.4

* With CO_2-sensor control, the EPC value can be reduced by another 0.03-0.08. These values are based on the Novem reference terraced house.

2.2 Examples installation concepts

EXAMPLES FROM D-LABEL TO A-/B-LABEL

Example A: Brink ACC system. Since the Brink ACC system is easily retrofitted, the ACC system is one of Brink's ventilation solutions for improving the energy label. Major energy savings are realised by the ventilation system with demand-control per room.

Example B: Brink Sun Set. If further improvement of the energy label is desired or the client or occupant wants a sustainable installation solution, Brink Climate Systems can offer a customised system with the Sun Set. In view of the often limited room in existing social housing, a good choice may be the highly compact Sun Set CV 1-115, with a collector area of 2.3 m^2 and a 115-litre solar water heater.

ADVICE AND MORE INFORMATION

The above examples provide an indication of the savings to allow more insight into the possibilities of the Brink ventilation and solar system concepts. Of course there are more solutions. The consultants of Brink Climate Systems will be happy to give you advice. You will find more information on the ventilation systems in Chapter 3 and on the Brink Sun Set in Chapter 4 of this catalogue.

2.2.2 PASSIVE HOUSE CONCEPT

THE PASSIVE HOUSE APPLIANCE

The Passive House Appliance by Brink Climate Systems is an integrated appliance in which various disciplines such as heating, ventilating and heating domestic hot water have been combined in one compact appliance. The unique control system and the fact that all components are mounted together in one housing, reduce the risk of installation errors and guarantee maximum result. The Passive House Appliance is a giant leap forwards towards energy-neutral dwellings.

The Passive House concept is characterised by a compact solution, integrating domestic hot water, ventilation and heating. As a result of the sophisticated dwelling design, heat can hardly escape from the Passive House. That is because the design features excellent envelope insulation, without thermal bridges and with adequately sealed joints and cracks, combined with carefully thought out sun orientation and sun screening. Consequently, it requires hardly or no energy to keep the dwelling at the right temperature in winter and the dwelling remains pleasantly cool in summer.

SOLAR WATER HEATER

Brink Climate Systems developed two Passive House Appliances. Both versions of the Passive House Appliance use a solar thermal collector to generate heat and to store it in a solar water heater. That is the heart of the system. The solar water heater supplies heat and domestic hot water. The way in which heat is generated and the capacity depend on the choice of appliance. The vessel has a capacity of 200 litres of sanitary water for maximum utilisation of solar energy to guarantee perfect hot water comfort. Primary heating of the vessel is through the solar thermal collectors and, if necessary, a high-efficiency Brink HRE central heating boiler heats it further.

APPLICATION

The Passive House concept is suitable for newly built dwellings that comply with the Passive House criteria so they are almost energy-neutral, referred to as Passive Houses. In addition, the concept is also suitable for innovative renovation projects. So far passive homes are mainly being built in German-speaking countries, Scandinavia and Belgium. The Passive House Appliance offers an affordable solution for ensuring comfortable living and air quality, certainly at increasing energy costs.

ADVICE AND MORE INFORMATION

It is highly important for passive construction that the installation design is taken into account in the early stages of the development of the dwelling. Our consultants like to be involved in the development of passive houses from the initial stage. Experience has taught us that timely planning of installations in these dwellings has a major influence on the correct performance of the installation and will prevent delays in the construction process. The consultants of Brink Climate Systems are happy to participate in this respect. You will find more information on the Passive House Appliance in Chapter 5 of this catalogue.

2.2 Examples installation concepts

2.2.3 BQLS CONCEPT

BQLS, BRINK QUALITY OF LIFE SYSTEM

BQLS, the Brink Quality of Life System, is a modular concept for highly comfortable and energy-friendly heating, cooling and ventilating of dwellings. BQLS is built around the series Elan Duo 2-zone air heaters. As standard, it has two independently operating zones for heating or cooling. One for the living zone and one for the sleeping zone. The Renovent HR heat recovery unit recovers the heat from the ventilation air and the heat source is a Brink 36/30 HRE central heating appliance with integrated DHW supply class CW-5. The complete installation is connected to a central control panel, the Climate Master. The Climate Master automatically controls all necessary functions for heating, cooling and ventilating. The basic installation can be extended as desired with many options such as cooling and heating with a heat pump. Of course the BQLS system can also be complemented with the Brink Sun Set.

WIDELY APPLICABLE IN NEW PROJECTS AND RENOVATION

Its modular design makes BQLS suitable for almost all types of dwellings and comfort levels: from mass production to (very) luxurious dwellings and for new projects as well as renovation and renewal projects. From basic to all-in comfort systems and everything in between. Extra functionalities and comfort can also be added when replacing an existing installation.

ADVICE AND MORE INFORMATION

The broad range of solutions makes BQLS suitable for any dwelling. The interaction between supply and demand is the key to success. When the wishes have been defined, Brink Climate Systems can arrange the right choices and installations. Our consultants will be happy to participate. You will find more information on BQLS in Chapter 5 of this catalogue.

2.2.4 SCHOOL VENTILATION CONCEPTS

BROAD RANGE SCHOOL VENTILATION

Improving the indoor climate in schools is a topical subject. Surveys have shown that in more than 80% of current schools and daycare centres the indoor climate is seriously inadequate. Brink Climate Systems has developed a wide range of solutions with or without heat recovery for schools.

ACC SCHOOL VENTILATION

The Brink ACC system is an extremely effective way for ventilating classrooms. Demand-controlled ventilation (clock- or CO_2-controlled), distributed or central extraction, and the possibility to combine the system with any existing ventilation systems are just a few of the special system characteristics.

RENOVENT HR SCHOOL VENTILATION

The Renovent HR has been extended with a special supply duct for a very even air distribution in the classroom and a constructional cupboard for situations where it is not possible to place the Renovent HR in a nearby room, for instance a storage room. Automatic control with CO_2-sensors and automatically increased night ventilation to cool the classroom with cool outdoor air are some of the special features.

3.1 Ventilation

GENERAL INFORMATION

Brink Climate Systems is a total supplier in the field of integrated solutions for heating, ventilation and hot water. With regard to ventilation there are many possibilities to make dwellings and buildings healthier, more energy-efficient and more comfortable. Brink Climate Systems offers an extensive product range. These ventilation solutions not only perform effectively, but they are also easy to install. In addition, our products are suitable for new projects and existing buildings alike.

Brink Climate Systems supplies central, distributed and school ventilation systems. Central ventilation systems cater for the ventilation need in various habitable rooms from a central point. Central ventilation products include Renovent HR, ACC Dwelling ventilation and Flexivent.

Distributed ventilation systems can do without long ventilation ducts and they are installed separately in every room to realise the desired indoor climate. Distributed ventilation products include Advance and Sonair stand-alone. The Brink school ventilation systems are designed for improving the interior air quality, particularly in classrooms. The system are easily retrofitted and they fully automatically control the ventilation rate. Brink Climate Systems offers Renovent HR en ACC School ventilation. 'Miscellaneous ventilation' includes the dwelling ventilation box, roof fans and the fan casing.

The ventilation systems by Brink Climate Systems are available with balanced ventilation with heat recovery. Installation of balanced ventilation with heat recovery results in continuous and controlled ventilation. Every moment of the day the desired indoor climate is realised at the lowest possible energy consumption. The heat recovery system transfers the heat of the warm exhaust air to the clean, fresh outdoor air. That way 95% of the heat is preserved and waste of energy is prevented.

The ventilation systems by Brink Climate Systems are also available without heat recovery. These too ensure constant and controlled supply of fresh, filtered outdoor air.

NEW IN THE RANGE

In 2010 Brink Climate Systems introduces the Breathing Window (distributed ventilation). Learn more about the Breathing Window in Chapter 1 New products and concepts.

BENEFITS OF VENTILATION SOLUTIONS BY BRINK CLIMATE SYSTEMS

- Make a major contribution to energy savings.
- Guarantee a healthy and comfortable indoor climate.
- Offer the highest EPC gains at the lowest costs.
- It is the ultimate solution to comply with the standard (EPC and Building Decree).
- Simple control.
- Low-maintenance.
- Fresh air 24 hours a day.
- Very low noise level.

VENTILATION PRODUCTS

	Products	With heat recovery	Without heat recovery
Central	Renovent HR	•	
	Ait Comfort Control		•
	Flexivent	•	
Distributed	Advance	•	
	Breathing Window	•	
	Sonair stand-alone		•
	Dwelling ventilation box		•
	Roof fans		•
	Fan casing		•

3.2 Central ventilation

3.2.1 RENOVENT

GENERAL INFORMATION

THE RENOVENT HR APPLIANCE

Renovent HR Large, Medium and Small have specifically been designed for balanced ventilation with heat recovery. The thermal energy in the foul air that is discharged from the dwelling is used to heat the fresh, clean outdoor air that is brought in. The heat exchanger transfers 95% of the heat, so it is no longer necessary to heat the ventilation air.

The heat recovery units are made of a sheet steel, cream epoxy-coated body (RAL 1013) containing a PETG heat exchanger and two 'constant flow' fans. In addition, the appliances are suitable for three adjustable flow rates.

The interior is made of high-quality CFC-free synthetic. This synthetic material has a high thermal resistance, is flame-extinguishing and non-hygroscopic. The appliances come with two standard filters (supply filter G3, exhaust filter G3). The filters can easily be taken out through the dark-blue filter door. These filters remove 95% of the dust from the air.

The accessories for the Renovent HR are listed in the chapter 'Renovent HR, accessories'.

RENOVENT HR LARGE, MEDIUM AND SMALL

The control unit of the Renovent HR Large, Medium and Small controls and monitors the safe operation of the appliance and ensures that the air quantities remain constant and at the preset values.

The electric and control system connections are placed on the outside. The appliances come with a display for setting and reading out functions. That enables continuous adjustment of the volume without having to open the appliance.

Renovent HR Medium and Large are both available in three versions.
A: Four air connections at the top (4b).
B: Two connections at the top and two connections at the bottom (2b/2o).
C: Three connections at the top and one connection at the bottom (3b/1o).

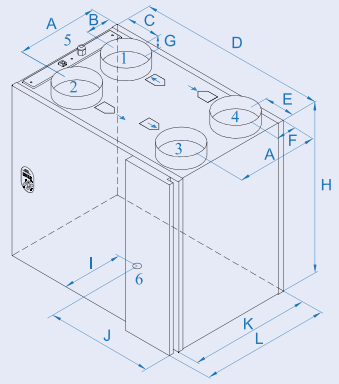
Renovent HR Small is available in the version with four air connections at the top (4b). If required, the appliance can be mounted in a kitchen cupboard.

The air connections of all versions come with a groove for sealing rings. The appliances are available in a right-handed or left-handed version.

3.2 Central ventilation

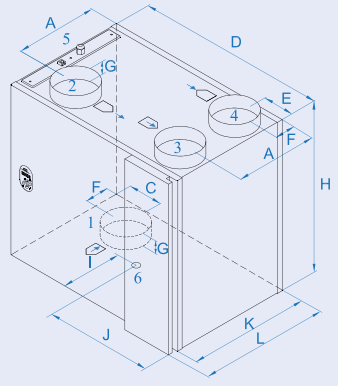
TECHNICAL INFORMATION

RENOVENT HR



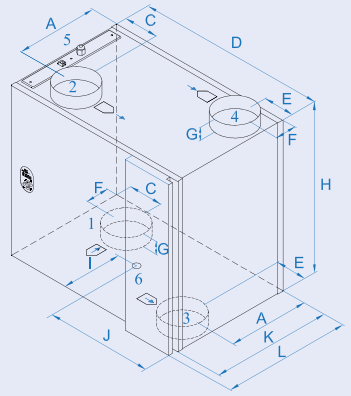
Large and Medium 4b R

RENOVENT HR



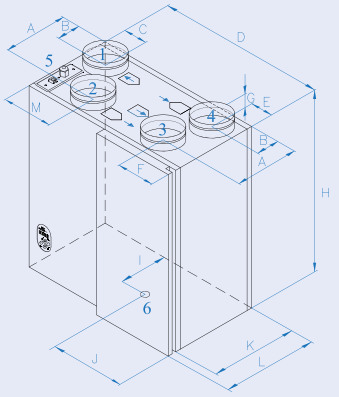
Large and Medium 3b/1o R

RENOVENT HR



Large and Medium 2b/2o R

RENOVENT HR



Small 4b R

RENOVENT HR SMALL, MEDIUM EN LARGE

Connection	right	Links
To dwelling	1	3
To atmosphere	2	4
From dwelling	3	1
From atmosphere	4	2

SLEEVES

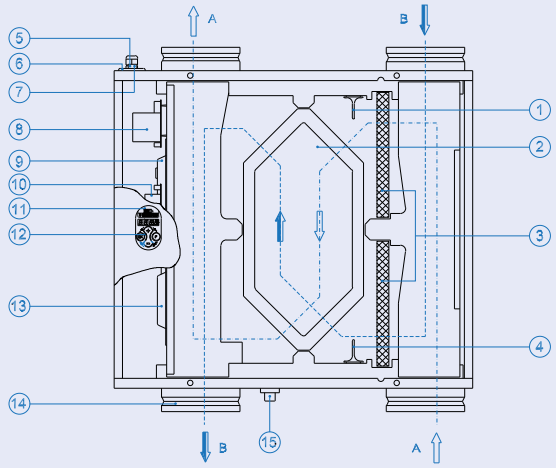
1	To dwelling
2	To atmosphere
3	From dwelling
4	From atmosphere
5	Electric connections
6	Condensate discharge
	Display at the front

DIMENSIONS RENOVENT HR (IN MM)

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	n
Large	336	126	165	675	89	114	53	602	220	385	430	455	-	-
Medium	321	121	165	675	89	99	45	602	210	385	420	445	-	-
Small	213	77	79	560	75	125	45	600	145	248	290	315	168	-

3.2 Central ventilation

RENOVENT HR

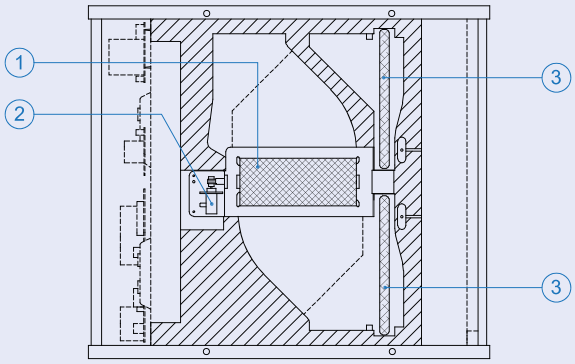


Front view Renovent HR Large and Medium 2b/2o R

PARTS

A	Exhaust air flow
B	Supply air flow
1	Indoor temperature sensor
2	Heat exchanger
3	Filters
4	Outdoor temperature sensor
5	Communication port
6	Metric swivel
7	OpenTherm connection
8	Option pcb (non-standard)
9	Supply fan
10	Basic pcb
11	Computer port
12	Control Panel
13	Exhaust fan
14	Connection orifices
15	Connection condensate discharge

RENOVENT HR



Front view cross-section bypass unit for night ventilation

for Renovent HR Large and Medium

PARTS

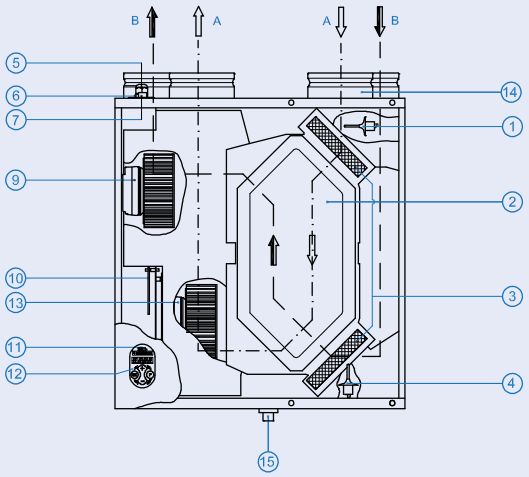
1	Bypass diffuser
2	Diffuser control
3	Filters

REMARK

Renovent HR can be reversed. For that purpose the front and rear covers are interchanged. The air connections remain the same. This is described in the installation instructions.

3.2 Central ventilation

RENOVENT HR



Front view cross-section Renovent HR Small

PARTS

A	Exhaust air flow
B	Supply air flow
1	Indoor temperature sensor
2	Heat exchanger
3	Filters
4	Outdoor temperature sensor
5	Communication port
6	Metric swivel
7	OpenTherm connection
9	Supply fan
10	Basic pcb
11	Computer port
12	Control Panel
13	Exhaust fan
14	Connection orifices
15	Connection condensate discharge

REMARK

Renovent HR can be reversed. For that purpose the front and rear covers are interchanged. The air connections remain the same. This is described in the installation instructions.

3.2 Central ventilation

TECHNICAL SPECIFICATIONS RENOVENT HR LARGE (BOTH FOR APPLIANCE WITH AND WITHOUT BYPASS UNIT)

Technical data	Renovent HR Large
Dimension duct connection [mm]	Ø 160 and Ø 180
Weight [kg]	32 (exclusive of weight bypass unit of 3.5)
Supply voltage [V~/Hz]	230/50
Protection degree	IP31
Temperature efficiency [%]	95

Mode	Absence mode	Presence mode	Cooking/showering mode	Maximum mode
Ventilation capacity [m³/h]	100	200	300	400
Resistance ducts system [Pa]	10	40	83	150
Rated power [W]	20	56	136	304

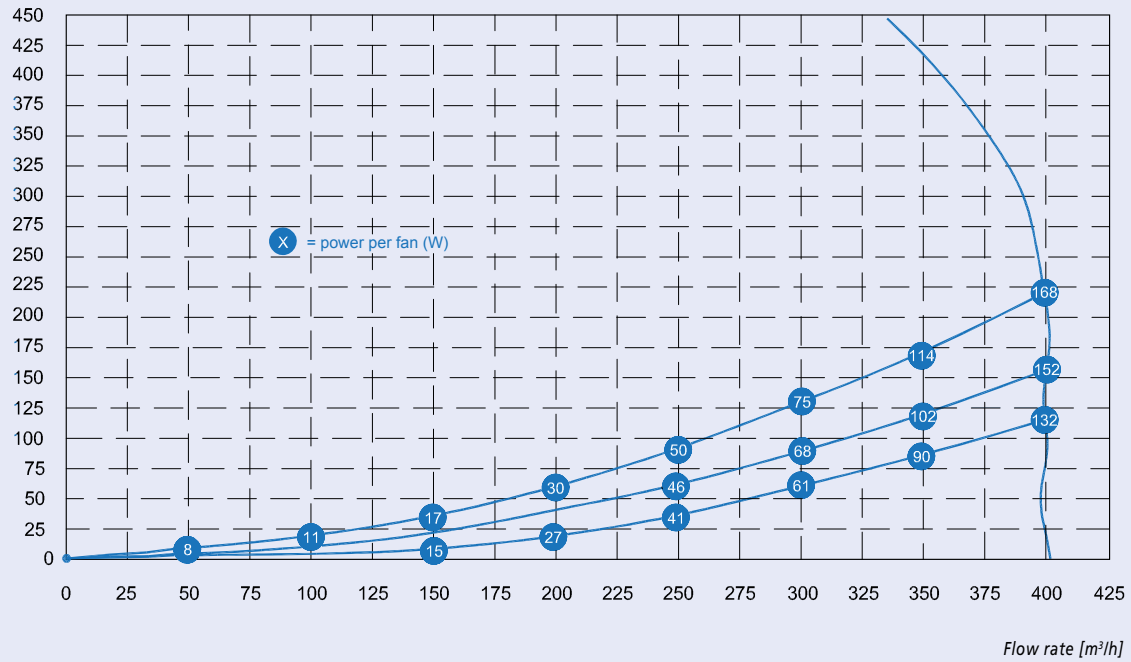
EPS calculation
Brink Climate Systems has information available for correctly entering data in an EPS calculation. Please contact our Consultancy Department.

SOUND CAPACITY LEVEL L_w RENOVENT HR LARGE

Acoustic data	Absence mode	Presence mode	Cooking/showering mode
Static pressure [Pa]	40	80	240
Acoustic capacity housing emission [dB(A)]	<32	42	53
Acoustic capacity duct "from" dwelling [dB(A)]	<31	38	47
Acoustic capacity duct "to" dwelling [dB(A)]	51.5	62	69

FAN GRAPH RENOVENT HR LARGE

Resistance ducts system [Pa]



Flow rate [m³/h]

3.2 Central ventilation

TECHNICAL SPECIFICATIONS RENOVENT HR MEDIUM (BOTH FOR APPLIANCE WITH AND WITHOUT BYPASS UNIT)

Technical data	Renovent HR Medium
Dimension duct connection [mm]	Ø 150 and Ø 60
Weight [kg]	31 (exclusive of weight bypass unit of 3.5)
Supply voltage [V~/Hz]	230/50
Protection degree	IP31
Temperature efficiency [%]	95

Mode	Absence mode	Presence mode	Cooking/showering mode	Maximum mode
Ventilation capacity [m³/h]	100	150	225	300
Resistance ducts system [Pa]	18	45	100	170
Rated power [W]	19	36	86	180

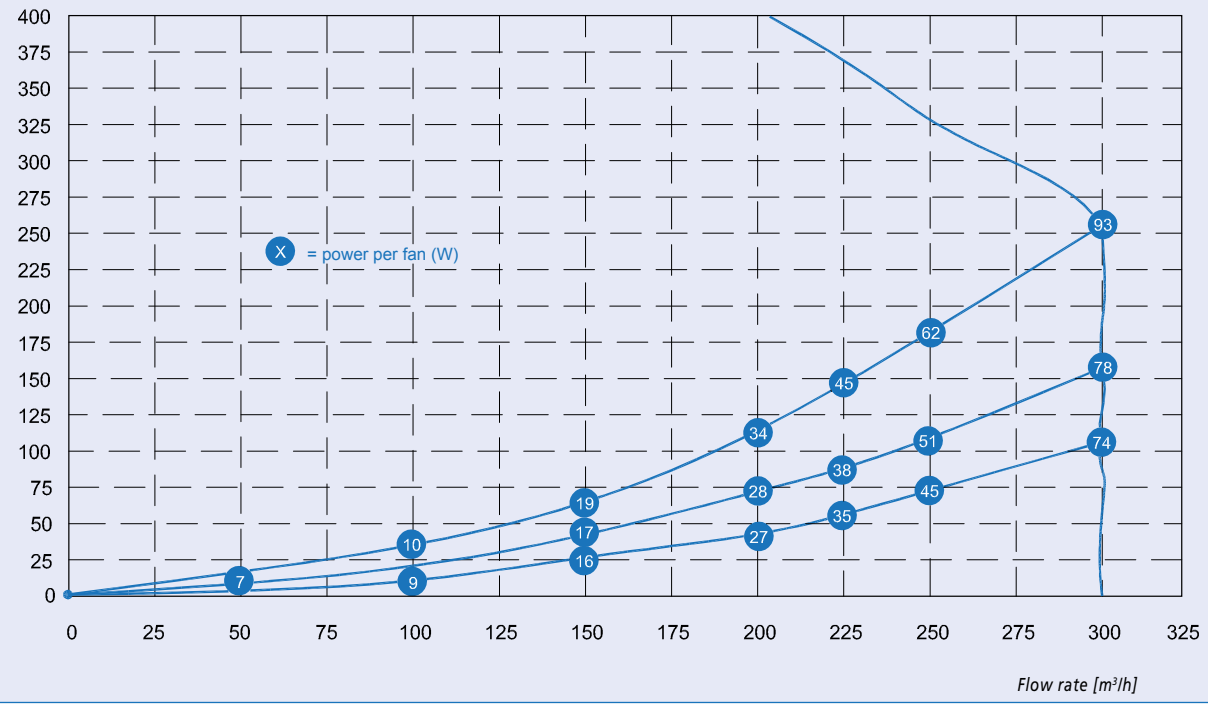
EPS calculation
Brink Climate Systems has information available for correctly entering data in an EPS calculation. Please contact our Consultancy Department.

SOUND CAPACITY LEVEL L_w RENOVENT HR MEDIUM

Acoustic data	Absence mode	Presence mode	Cooking/showering mode
Static pressure [Pa]	40	80	160
Acoustic capacity housing emission [dB(A)]	29	38	47
Acoustic capacity duct "from" dwelling [dB(A)]	<24	33	41
Acoustic capacity duct "to" dwelling [dB(A)]	49	56	66

FAN GRAPH RENOVENT HR MEDIUM

Resistance ducts system [Pa]



3.2 Central ventilation

TECHNICAL SPECIFICATIONS RENOVENT HR SMALL

Technical data	Renovent HR Small
Dimension duct connection [mm]	Ø 125
Weight [kg]	25
Supply voltage [V~/Hz]	230/50
Protection degree	IP31
Temperature efficiency [%]	95

Mode	Absence mode	Presence mode	Cooking/showering mode	Maximum mode
Ventilation capacity [m³/h]	75	100	150	180
Resistance ducts system [Pa]	24	42	102	150
Rated power [W]	25	34	74	116

EPS calculation

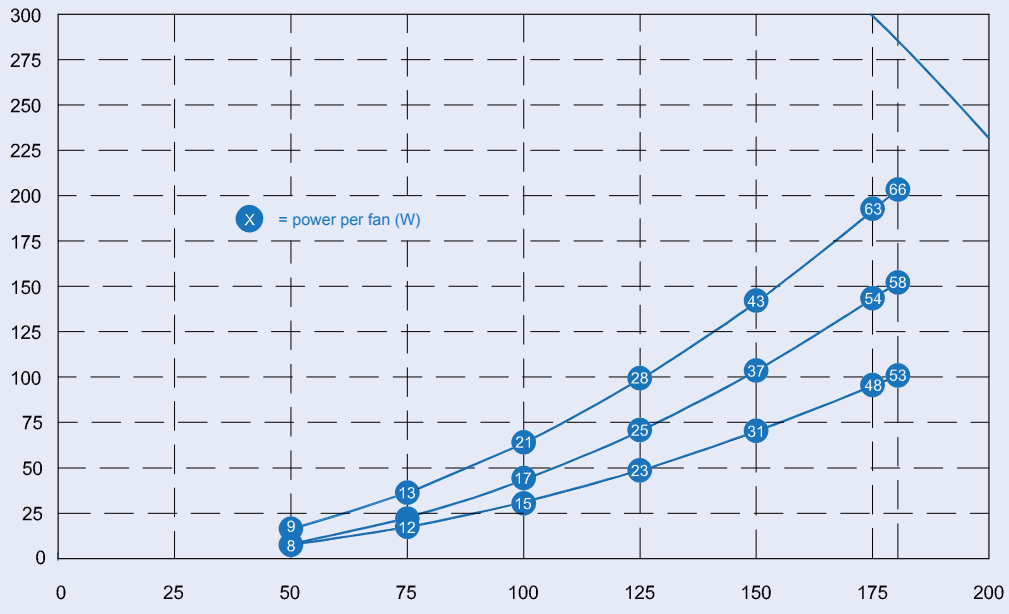
Brink Climate Systems has information available for correctly entering data in an EPS calculation. Please contact our Consultancy Department.

SOUND CAPACITY LEVEL L_w RENOVENT HR SMALL

Acoustic data	Absence mode	Presence mode	Cooking/showering mode
Static pressure [Pa]	40	80	160
Acoustic capacity housing emission [dB(A)]	32	39	48
Acoustic capacity duct "from" dwelling [dB(A)]	31	37	46
Acoustic capacity duct "to" dwelling [dB(A)]	49	56	66

FAN GRAPH RENOVENT HR SMALL

Resistance ducts system [Pa]



Flow rate [m³/h]

3.2 Central ventilation

TECHNICAL INFORMATION RENOVENT HR APPLIANCES

EXTENSION WITH BYPASS UNIT FOR NIGHT VENTILATION

Renovent HR large and Medium are available with a bypass for night ventilation that shuts off almost completely. In summer this bypass unit ensures that cool night air replaces in so far as possible the indoor air that has been heated during the day. The air is routed through the bypass unit. The appliance comes with an automatic control system that opens and closes the bypass valve.

A bypass unit can also be retrofitted by the installer or the user. This bypass unit leads roughly 70% of the supply air around the Renovent HR heat exchanger.

A suitable bypass unit that can be retrofitted is also available for the Renovent HR 250 with 'constant flow' fans and the Renovent HR 325. These appliances have been supplied until September 2004.

EXTENSION WITH OPTION PCB

Renovent HR Large and Medium can be fitted with an option pcb. It can be used to control various accessories, for instance an electric preheater and/or postheater (1000 W), a diffuser for sending extra ventilation air to certain rooms or an emergency contact. In addition, the option pcb has an input for a CO_2-sensor and a moisture sensor. The appliances can be supplied with premounted option pcb. The option pcb is also available as service kit for retrofitting.

INSTALLATION GENERAL

It is important to place the appliance level and to choose an installation room that is frost-free and allows installation of an adequate condensate discharge with air trap. In addition, the condensate discharge must be installed at a pitch.

At the front of the appliance there must be a free space of at least 700 mm for filter cleaning and appliance maintenance (780 mm for appliances with a bypass unit).

For the low voltage rpm control, the installer must install a 4-core data cable from the appliance to the 3-way switch. When using a 3-way switch with filter indication, a 6-core modular data cable is required.

The wiring of this low-voltage rpm control must be installed separate from the 230 V mains supply! Renovent HR Large, Medium and Small come as standard with a power cable with plug. Renovent HR Large, Medium and Small can optionally be fitted with a Perilex plug.

Refer to ISSO 61 and 62 for correct installation of ventilation systems with heat recovery. These describe how a properly performing ventilation system with heat recovery can be created.

RENOVENT HR LARGE, MEDIUM AND SMALL

Renovent HR Large, Medium and Small can be mounted on the floor or on the wall. A mounting support for floor mounting is available.

Impact sound must be avoided. All versions of the Renovent HR Large, Medium and Small come with a separate mounting set. It allows vibration-free mounting to the wall. This should preferably be done to a solid wall with a mass of 200 kg/m^2.

INSTALLATION BYPASS UNIT FOR NIGHT VENTILATION

The bypass unit for night ventilation is mounted to the front of the Renovent HR Large or Medium with the aid of the supplied screws. Then the standard front cover of the appliance for the bypass unit can be mounted. The bypass unit comes with two filters which are longer than the standard filters for the Renovent HR Large and Medium. That is because the appliance is 80 mm deeper after installation of the bypass unit. Installation of the bypass unit is also possible for the version of the Renovent HR Large and Medium.

3.2 Central ventilation

3.2.2 RENOVENT ACCESSORIES

GENERAL INFORMATION

GENERAL

A properly performing heat recovery installation starts with a good design, use of the right products and expert assembly. For the key starting points for a proper design, we refer to the chapter 'General design information'.

The Renovent HR forms the heart of a heat recovery installation. You will find more information on this appliance in the chapter 'Renovent HR, appliances'. Information on ducts and diffusers can be found in the chapters with those same names later in this catalogue. This chapter will provide you with all information on the accessories necessary to create a good installation.

REMOTE CONTROL: 3-WAY SWITCH (WITH FILTER INDICATION)

The 3-way switch allows the user to choose between three modes: 1. absence mode, 2. presence mode and 3. cooking/showering mode. The switch is quickly and easily connected on the outside of the appliance using a data cable and a connector. With the aid of a splitter you can easily connect several switches, for instance an additional switch in the bathroom.

The 3-way switch has a filter indication light. That shows when the filter has to be cleaned. Very convenient for the resident.

3.2 Central ventilation

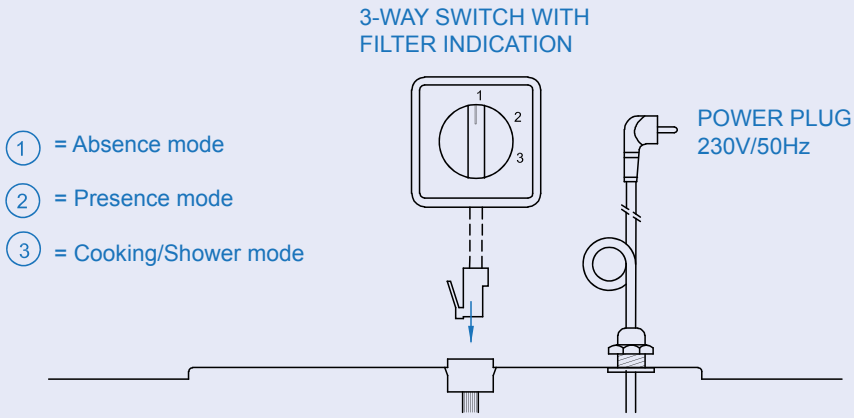
REMOTE CONTROL: WIRELESS

In addition to the 3-way switch (with filter indication) a wireless remote control is available. The radiographically operated wireless remote control consists of a transmitter unit (RF transmitter) and a receiver (RF receiver). Several transmitters can be set for one appliance, for instance in the kitchen as well as in the bathroom. Additional transmitters can easily be signed on to the receiver.

The switch on the transmitter allows the user to choose between absence mode, presence mode, cooking/showering mode or the clock setting (time function).

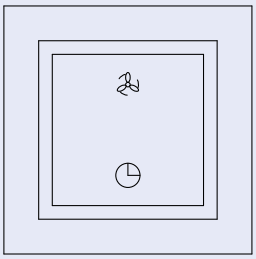
A kit containing a transmitter and a receiver is available for simply retrofitting a second switch in the bathroom. This kit can be used for the Small, Medium, Large and SWB.

RENOVENT HR LARGE, MEDIUM AND SMALL



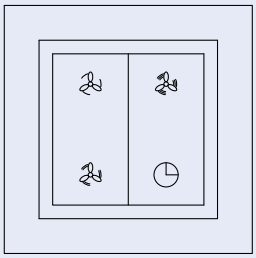
3-way switch with filter indication

RENOVENT HR LARGE, MEDIUM, SMALL



Transmitter with 2 settings

RENOVENT HR LARGE, MEDIUM, SMALL



Transmitter with 4 settings

3.2 Central ventilation

BRINK CO_2-SENSOR FOR DEMAND-CONTROLLED VENTILATION IN ONE HABITABLE ROOM.

Over the past years, the carbon dioxide level (CO_2) is increasingly considered the main parameter for the indoor air quality. The CO_2 level in the room mainly depends on the presence of people in the room and the ventilation rate. Controlling the ventilation on the basis of CO_2 percentage on the one hand guarantees the indoor air quality and on the other hand it prevents ventilation at the wrong moment, excess ventilation. That means additional energy savings.

The Brink CO_2-sensor with its Non-Dispersive Infra-Red measuring principle has a long service life, is self-calibrating and has a high stability. It comes as standard in a surface-mounted version with both a relay and a 0-10 V output. The relay output can be used to switch between 2 settings on the Renovent. The 0-10V output can be used for a continuous control system. Then the sensor must be connected to the Renovent option pcb.

DEMAND-CONTROLLED VENTILATION

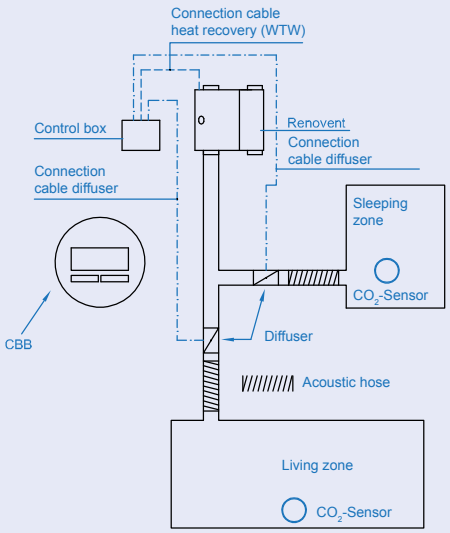
Demand-controlled ventilation is an installation solution enabling distributed, demand-controlled ventilation within the balanced ventilation with heat recovery concept. The ventilation rate is geared to the need. The available ventilation air is routed to the place where ventilation air is demanded.

A TNO certificate of equivalence indicates that the EPC advantage from controlled demand is 0.072 (2-zone time control) to 0.081 (2-zone CO_2-control system). A TNO-authorised 'Recalculation form demand-controlled balanced ventilation' is available.

Communication between the various components is wireless. The CBB (Control Panel Brink) components are connected to be 230 V mains in an electrical box. The CBB has the following control options:

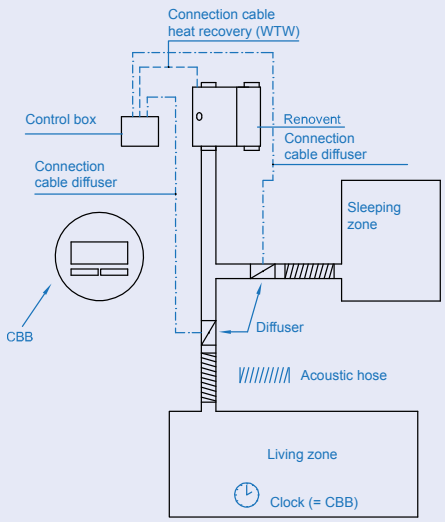
- Automatic based on presence (CO_2-sensor)
- Automatic based on a time program (clock function)
- Manual control

CO_2-SENSOR



Setup with CO_2-sensor

CLOCK FUNCTION



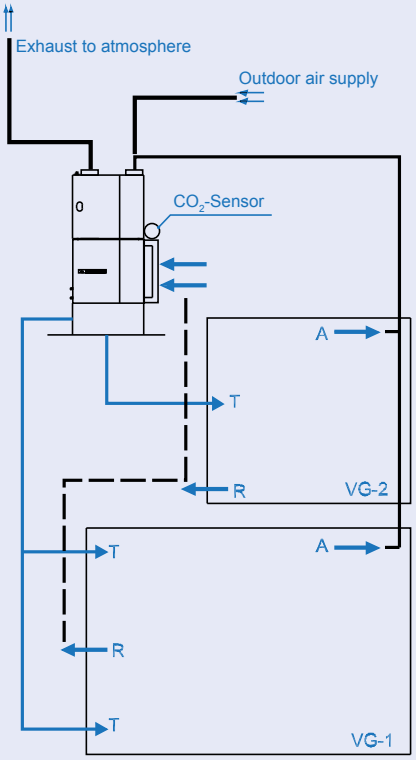
Setup with clock function

3.2 Central ventilation

EASE OF VENTILATION, ENERGY ECONOMY AND EPS GAIN

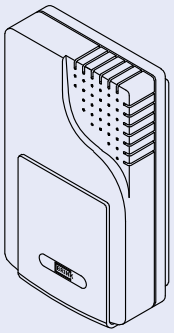
If an air heater is installed in combination with a Renovent HR, adding a CO_2-sensor in the return air flow enables demand-controlled ventilation. Moreover, this feature creates additional EPS gains of about 0.06. For that purpose Renovent HR must be equipped with an option pcb.

DEMAND CONTROL



Principle demand control

CO_2-SENSOR



CO_2-sensor for Renovent HR with option pcb

CONNECTOR CENTRAL HEATING WITH HEAT RECOVERY

In cooperation with Intergas Verwarming, an installation solution has been developed for Renovent HR Medium en Small for combining the central heating discharge and heat recovery. The discharges of the Intergas central heating boiler and Renovent HR are combined in one connector. This connector is made of flue gas-resistant material and, because of the ventilation air exhaust, it has an internal diameter of 150 mm. The connector has one 80 mm connection for connecting the flue gas exhaust duct of the Intergas appliance. To prevent back flow of flue gases, the connector features a nonreturn diffuser. The Intergas central heating boiler* has an internal nonreturn diffuser in the flue gas discharge. That prevents flue gases and spent ventilation air from other storeys from flowing back into the dwelling. In all cases a fire stop must be placed at every separating wall between dwellings (under NEN 6069).

* Note! Intergas must supply these Intergas appliances with a special burner controller suitable for the connector.

CONNECTOR CENTRAL HEATING WITH HEAT RECOVERY

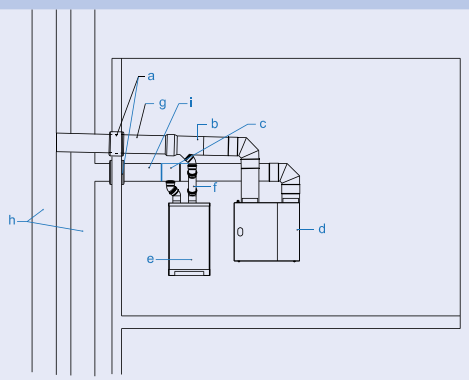


Diagram connector central heating with heat recovery

PARTS

a	Fire stop
b	Connector central heating - heat recovery Ø 160 - 80 - 150
c	T-piece 150 - 80 - 150 spiro material insulated
d	Renovent HR Medium or Small
e	Intergas central heating boiler
f	Thick-walled alu or PP, Ø 80 mm
g	PP tube Ø 160 mm, with thermal insulation
h	Discharge under ISSO62
i	Brink synthetic duct Ø 150 mm

3.2 Central ventilation

TECHNICAL INFORMATION

CONNECTING DUCTS RENOVENT HR

To prevent condensation on the outside of the outside air supply duct and the air exhaust duct from the Renovent HR, these ducts must be provided with an external vapour barrier as far as the appliance. It is recommended to connect the ducts from and to the dwelling flexibly to the appliance using Brink acoustic flexible hose with a minimum length of 1 m. Finished mufflers are available for this purpose.

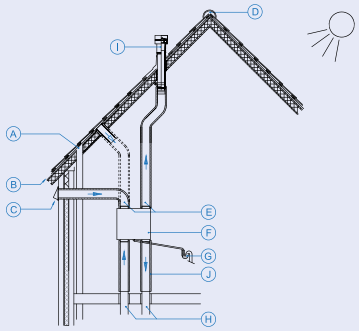
Brink carries a complete range of synthetic ducts with accessories. The synthetic duct can easily be mounted and also provides good insulation.

The supply ducts system must be designed to comply with NEN 1070 in nominal setting. Pay attention to crosstalk and installation noise, also for incorporated ducts. If necessary, the supply ducts must be insulated (for instance when they are installed outside the insulated envelope). For a more comprehensive supply ducts system, it is recommended to place control diffusers in the ducts where necessary.

SLEEVES RENOVENT HR

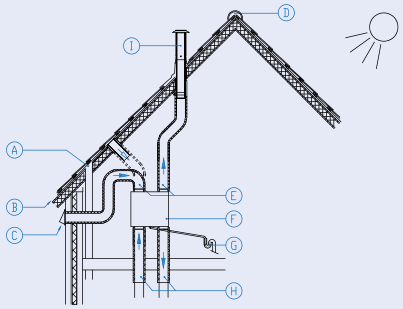
Outdoor air supply preferably comes from the wall. If the outdoor air is taken from under the roof tiles, it must be done from the shadow side of the dwelling. Condensate formation in the roof deck must be prevented and no water may run in. In addition, the outdoor air supply duct must be designed to prevent surface condensation. The discharge duct must be taken through the roof deck in such a manner that no condensate can be formed here either. In addition, surface condensation must be prevented when installing the discharge duct. It is important to always use an insulated ventilation roof sleeve. The location of the mechanical ventilation air discharge and the sewer vent must be chosen in such a manner that they do not cause nuisance for the supply. The supply diffusers in the dwelling itself will have to be located to prevent fouling and draught. In addition, sufficient overflow openings must be installed (see NEN 1087, door gap 20 mm).

RENOVENT HR LARGE LEFT-HANDED



Connection example

RENOVENT HR MEDIUM LEFT-HANDED



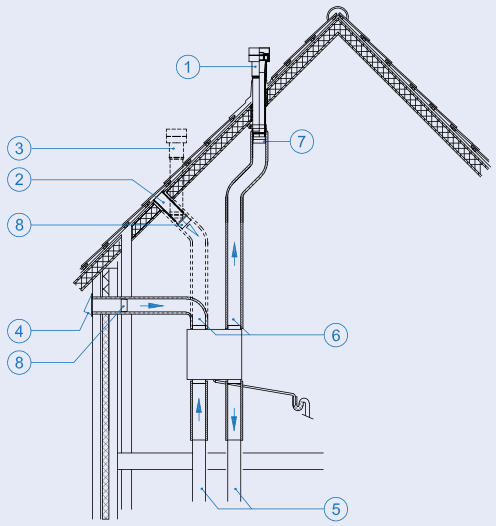
Connection example

PARTS

A	No sewer vent in the same roof area as the ventilation supply
B	Ventilation supply possibility at end roof area
C	Preferred location for ventilation and supply
D	Ventilated ridge construction
E	Connect supply and exhaust ducts flexibly insulated, with vapour barrier
F	Renovent HR (place level)
G	Connect condensate discharge according to installation instructions
H	Connect supply and exhaust ducts acoustically insulated
I	Insulated ventilation roof sleeve

3.2 Central ventilation

RENOVENT HR LEFT-HANDED



Sleeves

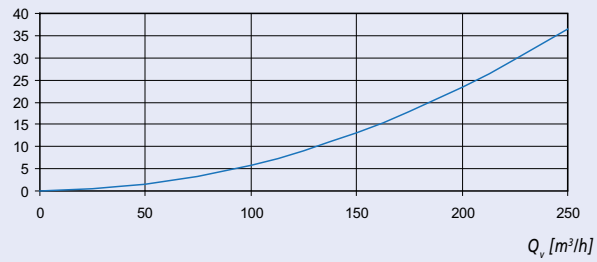
SLEEVES

	Description	Ø 125 mm < 180 m³/h	Ø 150 mm < 250 m³/h	Ø 160 mm 250 - 325 m³/h	Ø 180 mm > 325 m³/h
1	Ventilation roof sleeve (exhaust) D125 insulated	•			
	Ventilation roof sleeve (exhaust) D150 insulated		•		
	Ventilation roof sleeve (exhaust) D166 insulated		•	•	•
2	Ventilation supply (under tiles) D125, insulated	•			
	Ventilation supply (under tiles) D150 insulated		•		
	Ventilation supply (under tiles) D180 insulated			•	•
3	Ventilation roof sleeve (supply) D125 insulated	•			
	Ventilation roof sleeve (supply) D150 insulated		•		
	Ventilation roof sleeve (supply) D180 insulated			•	•
4	Ventilation supply (wall) D125 insulated	•			
	Ventilation supply (wall) D150 insulated		•		
	Ventilation supply (wall) D180 insulated			•	•
5	Acoustic duct D125 (1 m)	•			
	Acoustic duct D150 (1 m)		•		
	Acoustic duct D160 (1 m)			•	
	Acoustic duct D180 (1.5 m)				•
6	HR duct D125	•			
	HR duct D150		•		
	Thermally insulated duct (D160)			•	
	HR duct D180				•
7	Adapter 180-150 and connector D150 accessory				•
	Adapter 160-150 and connector D150 accessory			•	
8	Adapter 180-160 and connector D180 accessory			•	

3.2 Central ventilation

RESISTANCE CURVE

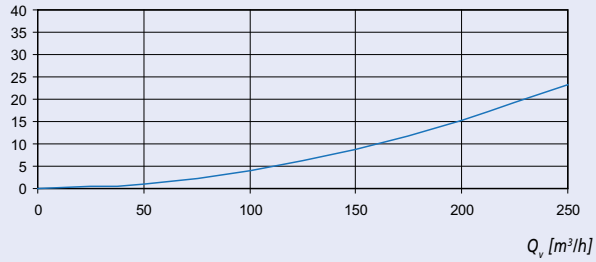
Each [Pa]



Resistance ventilation supply (wall), D150 insulated

RESISTANCE CURVE

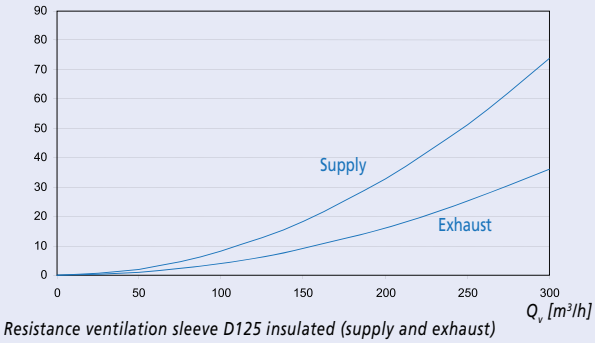
Each [Pa]



Resistance ventilation supply (under tiles), D150 insulated

RESISTANCE CURVE

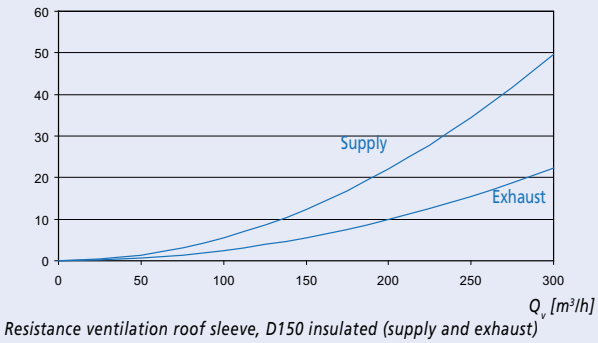
Each [Pa]



Resistance ventilation sleeve D125 insulated (supply and exhaust)

RESISTANCE CURVE

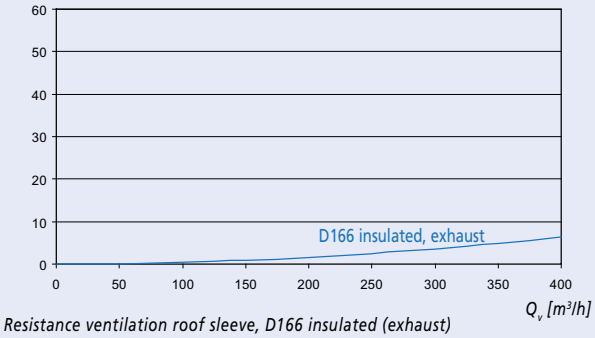
Each [Pa]



Resistance ventilation roof sleeve, D150 insulated (supply and exhaust)

RESISTANCE CURVE

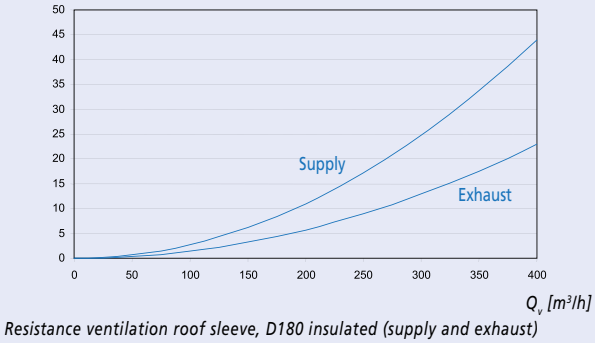
Each [Pa]



Resistance ventilation roof sleeve, D166 insulated (exhaust)

RESISTANCE CURVE

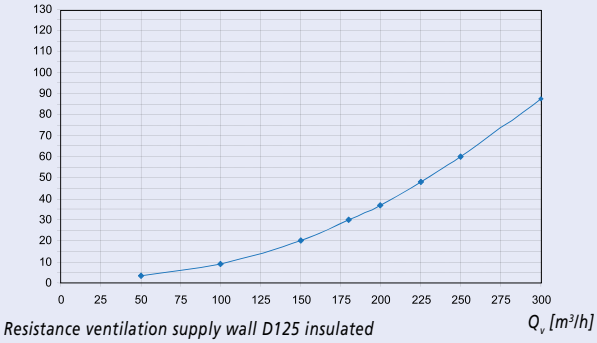
Each [Pa]



Resistance ventilation roof sleeve, D180 insulated (supply and exhaust)

RESISTANCE CURVE

Each [Pa]



Resistance ventilation supply wall D125 insulated

3.2 Central ventilation

3.2.3 AIR COMFORT CONTROL (ACC) DWELLING VENTILATION

GENERAL INFORMATION

AIR COMFORT CONTROL (ACC)

ACC is a demand controlled ventilation system for dwelling that automatically controls the ventilation rate as required for every habitable room. With its simple installation, ACC offers a unique ventilation concept to create a healthy and comfortable indoor climate in new as well as existing buildings at a low energy demand.

WIDELY APPLICABLE IN NEW PROJECTS AND RENOVATION

The ACC system for dwellings is a simple and effective method for ventilating new and existing buildings at a low energy demand without a complex ventilation ducts system. Every habitable room receives fresh outdoor air through distributed mechanical air supply units (Sonair and/or Innoventus) with excellent sound-proofing and air-cleaning characteristics. The whispering air supply be controlled automatically or set manually on the Control Panel. A central exhaust unit removes the air through exhaust points in the kitchen, the toilet and the bathroom. The exhaust air rate is automatically geared for the supply air rate, guaranteeing balanced ventilation.

DEMAND-CONTROLLED VENTILATION

The ACC Control Panel controls the ventilation in every habitable room separately, if required at moments and flow rates as preprogrammed by the occupant. In addition, the ventilation can be controlled by sensors in the room which, based on the ambient carbon dioxide concentration (CO_2) optimise the airflow to keep the air quality at a healthy level.

SIMPLE INSTALLATION

The ACC features the unique Powerline Communication system through the electric mains between the ACC components. As a result, installation of control cables becomes superfluous, which saves installation costs and makes the system suitable for use in existing dwellings.

AIR SUPPLY UNITS

Suitable air supply units for the ACC system are the Sonair (for wall mounting) or the Innoventus (for mounting behind a heating radiator).

CONTROL PANEL

The Control Panel is the heart of the ACC system. This is where the required ventilation rates and times and cooking/showering mode can be set. The Control Panel also controls the Extraction Unit.

EXTENSION WITH CO_2-SENSOR

The ACC system can be extended with CO_2-sensors. These sensors measure the CO_2-content in the habitable room(s) and automatically adapt the quantity of supplied fresh outdoor air. That guarantees the correct ventilation rate and a healthy indoor climate at all times.

EXTRACTION UNIT

The Extraction Unit extracts the air from the dwelling through the installed ducts system and exhaust diffusers in kitchen, toilet and bathroom. The ventilation rate of the exhaust is adapted to the air supply rate through the various air supply units to the habitable rooms of the dwelling. That creates a ventilation balance in the dwelling. A bathroom switch (also RF) can be connected to the Extraction Unit to temporarily activate a higher extraction rate.

NET FILTERS

The ACC system must be fitted with a mains filter to comply with mandatory EMC requirements. The mains filter keeps the powerline signal within the dwelling and contributes to reliable communication. The ACC system must be connected to its own mains group to exclude external interference sources. The mains filter is available in a surface-mounted version and in version for mounting on a DIN rail.

3.2 Central ventilation

PHASE COUPLER

The ACC phase coupler interlinks the Powerline signals from a maximum of three different mains phases. It is used in existing dwellings where the ACC system components (Sonair, Innoventus, Extractor, Control Panel, CO_2-sensor, and Extraction Unit) are divided over several phases of the mains installation.

AIR BASIC SYSTEM (ABS)

The ABS is a simplified version of the ACC ventilation system, intended for dwellings that do not yet have a mechanical extraction system or for dwellings with humidity problems. A Sonair or Innoventus is installed in the kitchen and the master bedroom, an Extraction Unit arranges extraction.

TECHNICAL SPECIFICATIONS AIR SUPPLY UNITS

Appliance type	Sonair A+	Sonair F+	Innoventus
Dimensions H x W x D [mm]	455 x 310 x 134	455 x 310 x 134	370 x 410 x 142
Housing	Synthetic, colour white (RAL 9003)	Synthetic, colour white (RAL 9003)	Metal, colour white (RAL 9010)
Power supply [V~/Hz]	230/50	230/50	230/50
Ventilation capacity [dm³/s]	Max. flow rate 62.5 (225 m³/h) with G3 filter, continuously adjustable	Max. flow rate 62.5 (225 m³/h) with G3 filter, continuously adjustable	Max. flow rate 62.5 (225 m³/h) with G3 and F6 Filter, continuously adjustable on the Control Panel
Rated power [W]	9.6 at 17 dm³/s (60 m³/h) 52.3 at 62.5 dm³/s (225 m³/h)	9.6 at 17 dm³/s (60 m³/h) 52.3 at 62.5 dm³/s (225 m³/h)	9.6 at 17 dm³/s (60 m³/h) 52.3 at 62.5 dm³/s (225 m³/h)
Sound reduction* (G3 filter, sleeve: DV 100F)	Sonair A+:$D_{n,e,w}$= 52 dB (ISO 717-1:1996)	Sonair F+:$D_{n,e,w}$ = 56 dB (ISO 717-1:1996)	$D_{n,e,w}$=54 dB (ISO 717-1:1996)
White mains cable [m]	1.80	1.80	1.80

* Based on Peutz test report no. A. 1368

TECHNICAL SPECIFICATIONS SYSTEM ELEMENTS

	Control Panel	CO_2-sensor
Dimensions (mm)	100 x d 30	100 x d 25
Power supply [V~/Hz]	230/50	230/50
Rated power [W]	Nominal 1.5 Maximum 2.5	Nominal 1.5 Maximum 6.0

TECHNICAL SPECIFICATIONS ACC EXHAUST BOX

	ACC exhaust box
Dimensions H x W x D [mm]	260 x 380 x 340
Power supply [V~/Hz]	230/50 (1 phase with europlug)
Sound pressure level* [dB(A)]	28 at 75 m³/h, 20 Pa 46 at 225 m³/hour, 150 Pa
Rated power [W]	Max. 55 at 300 m³/h
Maximum ventilation capacity [m³/h]	440 at 150 Pa

* Sound pressure level in practical setup at 1 metre distance

TECHNICAL DATA MAINS FILTER

	63 A	100 A
Dimensions H x W x D [mm]	90 x 72 x 71	138,5 x 105 x 57
Version	DIN rail mounting	Surface-mounted

3.2 Central ventilation

TECHNICAL DATA WALL SLEEVE			
Type	DV100	DV100F	Flexible sleeve
Dimension ø x L [mm]	ø100 and L 500	ø 100 en L 500	ø 110 en L 420

TECHNICAL DATA WALL GRILLES				
Type	Square synthetic	Round aluminium	Round monumental	Brick size (Waal size)
Size [mm]	125 x 125	ø 100	ø 130	55 x 210
Version	Square synthetic	Round aluminium	Round cast iron	Coated steel
Suitable for	DV100 / flexible sleeve	DV100 / flexible sleeve	DV100 / flexible sleeve	Flexible sleeve
wall sleeve	rond	rond	rond	facing brick

SYSTEM SOUND SONAIR ACC				
Appliance Type	Sonair A+		Sonair F+	
Volume rate	$L_{t;AK}$ [dB(A)]	L_{PA}:10m² [dB(A)]	$L_{t;AK}$ [dB(A)]	L_{PA}:10m² [dB(A)]
30 m³/h	< 16.0	< 15.0	< 12.5	< 11.5
45 m³/h	< 22.5	< 22.5	< 18.5	< 18.5
60 m³/h	28.0	28.5	23.0	23.5
90 m³/h	36.5	38.0	32.5	34.0
140 m³/h	47.0	49.5	42.0	43.5

SYSTEM SOUND SONAIR AT 30 DB(A)		
Appliance Type	Sonair A+	Sonair F+
L_{PA}:10m² dB(A)	63 m³/hour	76 m³/hour

3.2 Central ventilation

3.2.4 FLEXIVENT

GENERAL INFORMATION

THE FLEXIVENT APPLIANCE

Flexivent has specially been designed for balanced ventilation with heat recovery. The thermal energy in the foul air that is discharged from the dwelling is used to heat the fresh, clean outdoor air that is brought in. The heat exchanger transfers 90% of the heat, so it is no longer necessary to heat the ventilation air.

Flexivent is a compact ventilation unit. It can be fitted with a full bypass for ventilation in summer without heat exchange.

FLEXIVENT 300 AND 400

Flexivent comes in two versions: Flexivent 300 and 400. These appliances feature an advanced control system with 3-way switch. Every setting is continuously adjustable. In addition, the appliances have automatically controlled frost protection.

The appliances are made of an ivory polypropylene, talcum-filled body containing a counterflow heat exchanger and rpm-controlled EC motors. The aluminium plate heat exchanger is corrosion resistant and fully recyclable. In addition, the exchanger ensures fully separated air flows and a low air-side resistance. The fans have back-bent vanes and vibration-free suspension. The fans have a low sound level, a very low fouling rate, low rated power, and a stable fan characteristic.

The appliances come with two G3 filters that can easily be taken out and cleaned by the user himself.

The Flexivent is available in a right-handed and a left-handed version. The appliances may optionally be fitted with a complete bypass for ventilation in summer without heat exchange, including automatic control.

AVAILABILITY

The Flexivent is exclusively available through specialised wholesalers.

TECHNICAL INFORMATION

FLEXIVENT 300

Mode	Flow rate [m³/h]	Rated power [W]
Maximum	300	134
High	225	64
Medium	150	31
Low	100	19

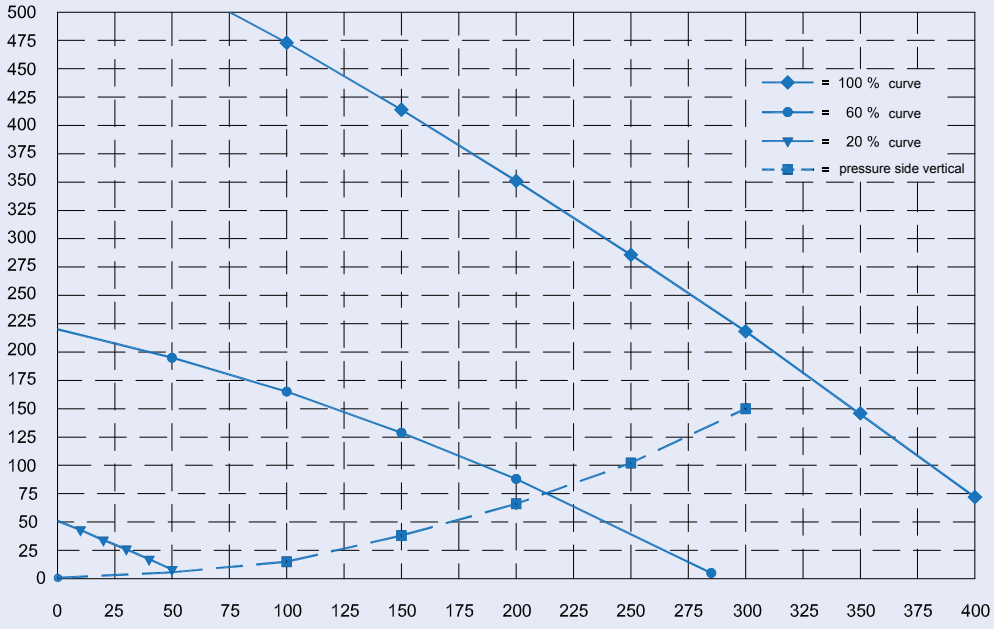
FLEXIVENT 400

Mode	Flow rate [m³/h]	Rated power [W]
Maximum	400	232
High	300	117
Medium	200	45
Low	100	17

3.2 Central ventilation

FLEXIVENT 300

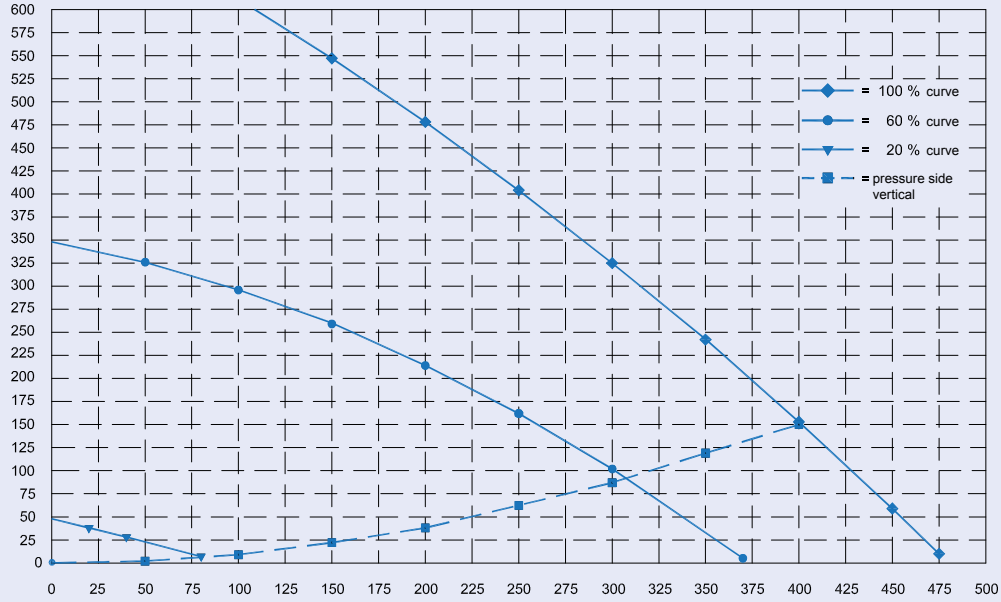
Resistance ducts system [Pa]



Flow rate [m³/h]

FLEXIVENT 400

Resistance ducts system [Pa]



Flow rate [m³/h]

3.3 Distributed ventilation

3.3.1 ADVANCE

GENERAL INFORMATION

ADVANCE

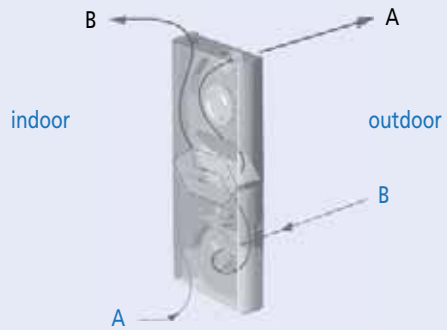
Advance is a demand-controlled, distributed ventilation unit with heat recovery for application in habitable rooms of dwellings and non-residential buildings. Advance can be used as stand-alone ventilation unit or as "the heart" of a hybrid ventilation system.

Because Advance does not require long air ducts, it is not only suitable for application in new dwellings, but it is also easily retrofitted in renovation projects, for instance to improve the energy label. Advance comes as standard with CO_2-sensor control, an enthalpy heat exchanger (keeping the efficiency optimal, even at low outdoor temperatures) and a built-in control interface with display. With the enthalpy heat exchanger, a condensate discharge is not necessary, because the humidity is transferred/maintained.

STANDARD FUNCTIONS

- Automatic CO_2- and RH control based on the indoor climate
- Manual control (Boost)
- Pause
- Increased summer night ventilation (only supply)

ADVANCE



Basic diagram

KEY

A	Exhaust foul air from dwelling
B	Supply clean outdoor air

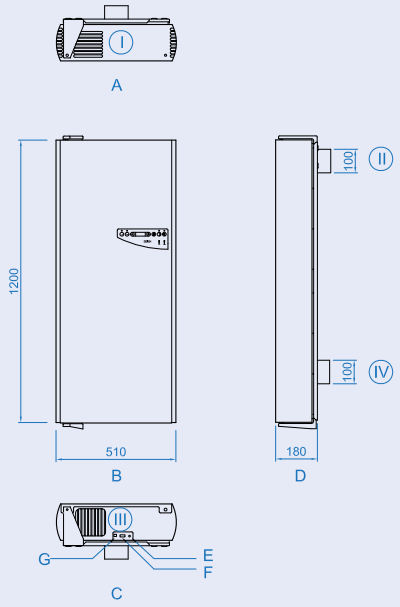
ADVANCE DESIGN

Advance is composed of a ventilation unit and a wall mounting plate. For wall feed-through a flexible wall sleeve is available with a choice between a surface-mounted grille or a built-in grille in facing brick size. Advance comes as standard with a mains cable, colour white, RAL 9010. The wall grilles are available in the colours RAL 9001, RAL 7016 and Old Iron. A drilling jig is available as mounting tool.

APPLICATION

The Advance is widely applicable in new projects and existing buildings, including offices, dwellings, health centres and hotels.

ADVANCE



Connections and dimensions inclusive of wall mounting plate

KEY

A	Top view	I	To dwelling
B	Front view	II	To atmosphere
C	Bottom view	III	From dwelling
D	Side view	IV	From atmosphere
E	Lead-through mains cable		
F	On/Off switch		
G	Service connector		

3.3 Distributed ventilation

TECHNICAL DATA	ADVANCE
Supply voltage [V/Hz]	230/50
Protection degree	IP30
Dimensions inc.. wall mounting plate (B x H x D) [mm]	500 x 1200 x 180
Connection diameters [mm]	2x ø100
Mass (with wall plate) [kg]	31
Filter class	F7 supply air G3 exhaust air
Ventilation capacity [m³/h]	0 - 150
Rated power [W]	6 - 102
Rated current [A]	0.06 - 0.7
Cos [φ]	0.52 - 0.62
Enthalpy heatexchanger efficiency	80 - 90%

3.3 Distributed ventilation

3.3.2 SONAIR STAND-ALONE VENTILATION

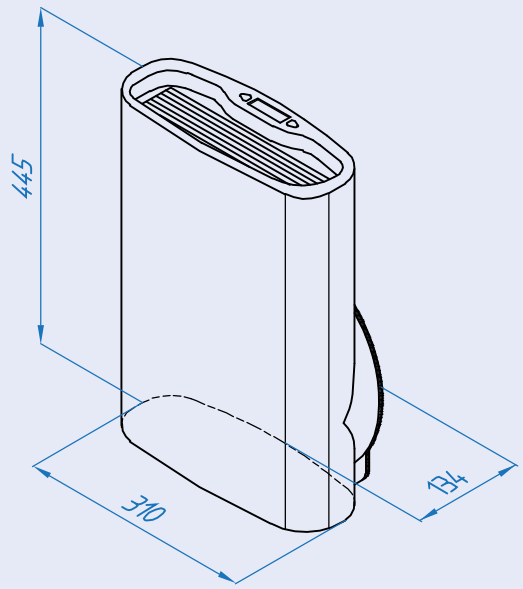
GENERAL INFORMATION

THE SONAIR

The Sonair ensures constant and controlled supply of fresh, filtered outdoor air. The Sonair ventilates at a whisper and effectively keeps out sounds from outside. In addition, the Sonair prevents unnecessary energy losses through uncontrolled and excessive ventilation. All this combined results in a healthy, comfortable and low-noise indoor climate.

The Sonair is mounted on the inside of an exterior wall. A fan in the Sonair sucks in fresh outdoor air through a duct in the exterior wall. The Sonair fan sits in a sound-absorbing chamber, limiting the fan sound and noise from outside to a minimum. Then the Sonair blows the air through the filter into the room. The flow rate of the supplied outdoor air is set with the aid of push buttons on top of the Sonair that control the fan rpm.

SONAIR



TECHNICAL INFORMATION

INSTALLATION

The Sonair can simply be mounted on the inside of an exterior wall. An extensive range of wall sleeves, wall grilles and other fittings makes it possible to install the Sonair at almost any location without affecting the appearance of the exterior wall.

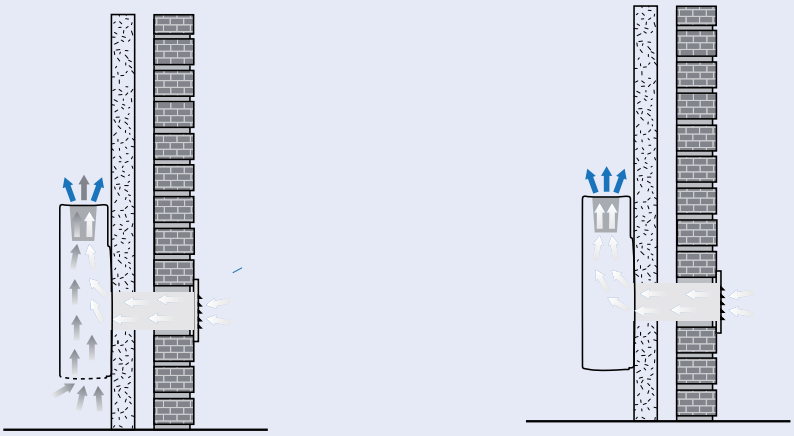
SONAIR A⁺ AND SONAIR F⁺

The Sonair is available as type A⁺ and F⁺. Both types ventilate using 100% outdoor air and they have excellent soundproofing qualities. In addition, they have what is known as a diaphragm valve to shut off the air supply.

3.3 Distributed ventilation

The Sonair A+ also offers the option of recirculation. The mixing ratio between outdoor air and recirculation air is adjustable. That makes it possible to also clean the indoor air through the built-in filter. That particularly has a positive effect, for instance, for occupants who have respiratory problems.

SONAIR



Sonair A+ (left) and F+ (right)

TECHNICAL SPECIFICATIONS SONAIR A+ AND F+

Appliance type	Sonair A+	Sonair F+
Dimensions H x W x D [mm]	455 x 310 x 134	455 x 310 x 134
Housing	Synthetic, colour white (RAL 9003)	Synthetic, colour white (RAL 9003)
Power supply [V~/Hz]	230/50	230/50
Ventilation capacity [dm³/s]	Max. flow rate 62.5 (225 m³/h) with G3 filter, continuously adjustable	Max. flow rate 62.5 (225 m³/h) with G3 filter, continuously adjustable
Rated power [W]	9.6 at 17 dm³/s (60 m³/h) 52.3 at 62.5 dm³/s (225 m³/h)	9.6 at 17 dm³/s (60 m³/h) 52.3 at 62.5 dm³/s (225 m³/h)
Sound reduction* (G3 filter, sleeve: DV 100F)	Sonair A+:$D_{n,e,w}$ = 52 dB (ISO 717-1:1996)	Sonair F+:$D_{n,e,w}$ = 56 dB (ISO 717-1:1996)
White mains cable [m]	1.80	1.80

*Based on Peutz test report no. A. 1368

TECHNICAL DATA WALL SLEEVE

Type	DV100	Flexible sleeve
Dimension ø x L [mm]	100 x 500	110 x 420

3.3 Distributed ventilation

TECHNICAL DATA WALL GRILLES				
Type	Square synthetic	Round aluminium	Round monumental	Brick size (Waal size)
Dimension ø [mm]	125 x 125	ø 100	ø 130	55 x 210
Version	Square synthetic	Round aluminium	Round cast iron	Coated steel
Suitable for	DV100 / flexible	DV100 / flexible	DV100 / flexible	Flexible sleeve
wall sleeve	sleeve round	sleeve round	sleeve round	facing brick

SYSTEM SOUND SONAIR				
Appliance type	SONAIR A+		SONAIR F+	
FLOW RATE	$L_{I;AK}$ [dB(A)]	L_{PA}:10m² [dB(A)]	$L_{I;AK}$ [dB(A)]	L_{PA}:10m²[dB(A)]
30 m³/hour	< 16.0	< 15.0	< 12.5	< 11.5
45 m³/hour	< 22.5	< 22.5	< 18.5	< 18.5
60 m³/hour	28.0	28.5	23.0	23.5
90 m³/hour	36.5	38.0	32.5	34.0
140 m³/hour	47.0	49.5	42.0	43.5

SYSTEM SOUND SONAIR AT 30 DB(A)		
Appliance Type	Sonair A+	Sonair F+
L_{PA}:10m² dB(A)	63 m³/hour	76 m³/hour

3.4 School ventilation

3.4.1 AIR COMFORT CONTROL (ACC) SCHOOL VENTILATION

GENERAL INFORMATION

CUSTOMISED SOLUTIONS FOR NEW AND EXISTING SCHOOLS

The ACC School ventilation system is a unique solution for a healthy and comfortable indoor climate, combined with energy savings. No matter if it involves a new building or ventilation improvement in existing school buildings.

VENTILATION SUPPLY

Ventilation supply to each classroom is arranged by placing mechanical air supply units behind heating radiators (type Innoventus) or on the wall (type Sonair). These supply units suck in air through a sleeve to be placed in the wall. The air is filtered before it gets into the room. The units are connected to the 230 V mains. The supply units have high-quality, acoustic, noise reducing and air filtering properties. The supply rate is controlled automatically through the central control system.

DEMAND-CONTROLLED VENTILATION

The ACC School ventilation system is a modular system that ventilates completely demand-controlled. Demand-controlled ventilation on the basis CO_2-sensors makes it possible to guarantee the indoor air quality. These sensors are built-in in a wall outlet and connected to the 230 V mains. The sensors send measured values to the central control system, on the basis of which the ventilation supply and exhaust are adjusted in order to realise the preset limit values for air quality (CO_2-concentration).

MECHANICAL EXHAUST

Central or distributed mechanical exhaust of indoor air can be realised by a roof fan with 0-10V control. The exhaust rate can be geared for the ventilation supply per classroom. When using a roof fan or exhaust box, allowance must be made for design and construction of exhaust ducts.

TECHNICAL INFORMATION

CENTRAL VENTILATION CONTROL

A central computer with ACC control software steers the demand-controlled ventilation supply and exhaust for every classroom or space separately. This computer uses mains modems to communicate through the 230 V mains network with a connected ventilation systems (ventilation supply, CO_2-sensors, mechanical exhaust) in the building. The ventilation control offers various programs and options for ventilation of every classroom or every space separately:

- Clock- or CO_2-controlled ventilation.
- Flushing classrooms for instance during breaks.
- Monitoring the air quality in classrooms (CO_2-concentration).
- Remote service and maintenance.

Refer to chapter 3.2.3 ACC Dwelling ventilation for further technical information.

3.4 School ventilation

3.4.2 RENOVENT HR SCHOOL VENTILATION

GENERAL INFORMATION

RENOVENT HR SCHOOL VENTILATION

The Renovent HR school ventilation system is designed for improving the interior air quality, particularly in existing classrooms. The system can simply be retrofitted and fully automatically controls the ventilation flow rate. Increased night ventilation is automatically switched on in summer for additional cooling of the classroom during the hours of the night.

Central part of the Renovent HR school ventilation system is the fan unit Renovent HR Large, equipped with bypass and option pcb. Dependent on the required ventilation capacity, one or two units are installed in a sound-absorbing wall cupboard. The wall cupboard can simply be constructed on site from individual panels.

The sound-insulated wall cupboard is not required if the Renovent HR appliances can be installed in an adjacent room (for instance a storeroom).

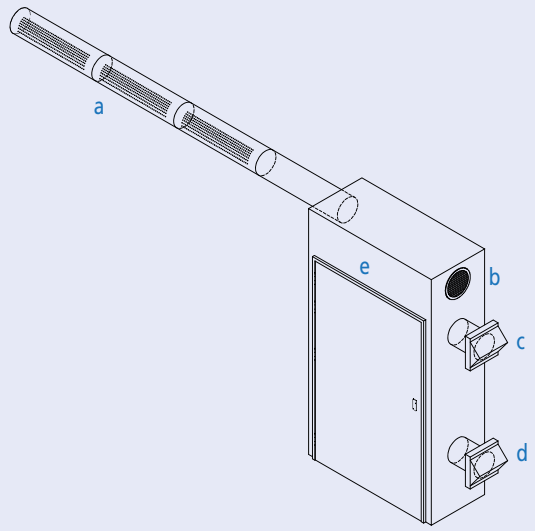
Two sleeves must be installed in the external wall for the supply and exhaust air.

A beautifully designed, coated duct (standard colour RAL 1013) ensures optimum distribution of fresh and filtered outdoor air. All other services are placed in the wall cupboard, concealed from view.

For fully automatic control on the basis of indoor air quality, a CO_2-sensor is available.

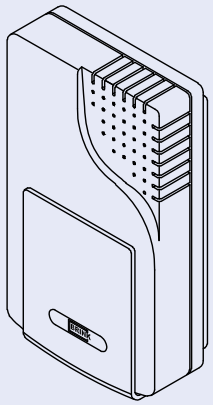
For more information please contact Consultancy Department.

EXAMPLE SCHOOL VENTILATION



Preview of a setup of Renovent HR school ventilation

CO_2-SENSOR



CO_2-sensor for school ventilation

PARTS

a	Supply fresh and heated outdoor air
b	Return connection
c	Exhaust ventilation air
d	Supply fresh outdoor air fish
e	Sound-insulated wall cupboard

3.5 Other ventilation

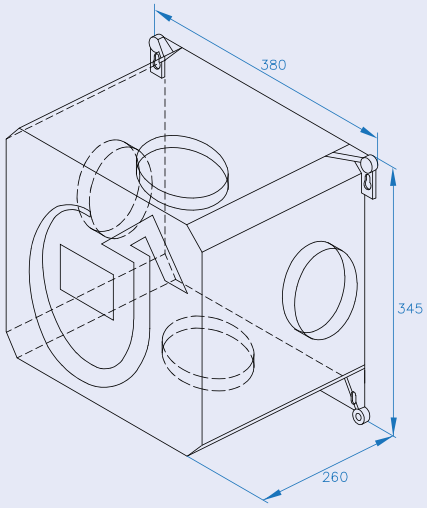
3.5.1 DWELLING VENTILATION BOX

GENERAL INFORMATION

BRINK DWELLING VENTILATION BOX AC AND DC

The ventilation box is used for mechanical ventilation. The ventilation housing is made of high-quality, fully recyclable synthetic material. This synthetic material is flame retardant (class B1/B2) and talcum filled. The spiral housing is made of polystyrene foam. The ventilation box has three connections at the suction side for ducts with a diameter of 125 mm. As standard, two ducts are capped. The box is available in AC and DC. The dwelling ventilation box DC is up to 70% more economical than the dwelling ventilation box AC. The fans are equipped with a thermal safety.

VENTILATION BOX

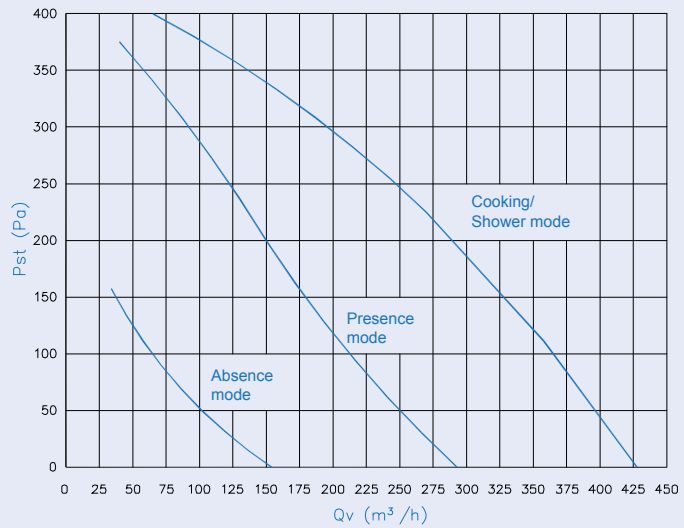


TECHNICAL INFORMATION

TECHNICAL SPECIFICATIONS DWELLING VENTILATION BOX AC

	Absence mode	Presence mode	Cooking/showering mode
Air quantity [m³/h]	75	150	300
Rated current [A]	0.12	0.16	0.29
Rated power [W]	12	20	65
Mains power (V~/Hz]	1-phase 230/50	1-phase 230/50	1-phase 230/50

FAN GRAPH DWELLING VENTILATION BOX AC

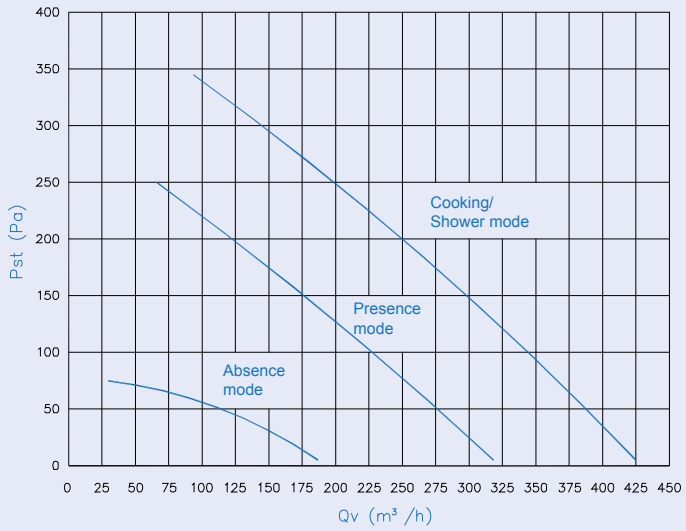


3.5 Other ventilation

TECHNICAL SPECIFICATIONS DWELLING VENTILATION BOX DC

	Absence mode	Presence mode	Cooking/showering mode
Air quantity [m³/h]	75	200	300
Rated current [A]	0.07	0.16	0.31
Rated power [W]	8	21	41
Mains power (V~/Hz]	1 phase 230-50	1 phase 230-50	1 phase 230-50

FAN GRAPH DWELLING VENTILATION BOX DC



INSTALLATION

There are three connection options for the ventilation box:

A: Single speed; the fan will run at one ventilation mode.

B: Dual speed; the fan can be set to presence mode or cooking/showering mode.

C: Triple speed; the fan can be set to absence mode, presence mode or cooking/showering mode.

For dual and triple control a switchbox will be installed near the cooker hood in the kitchen. Increasingly, people like to have an additional switch in the bathroom.

The ventilation box comes as standard with a power cord and a Perilex plug. The preset values for the three ventilation modes can be adjusted on the ventilation box using potentiometers.

3.5 Other ventilation

3.5.2 ROOF FANS

GENERAL INFORMATION

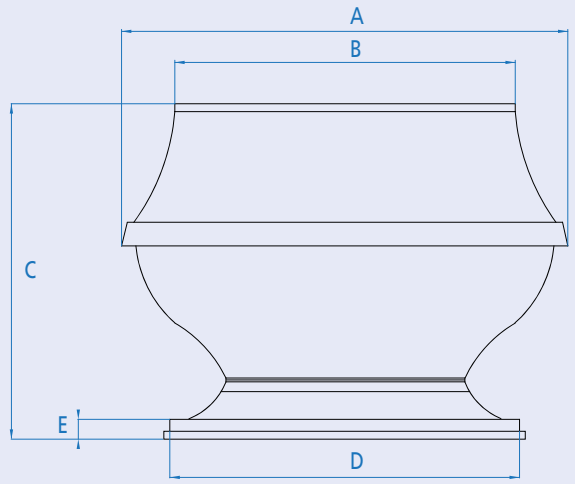
THE VERTICAL EXHAUST ROOF FAN

The housing of the vertical exhaust roof fan is made of high-quality HDPE (High-Density Poly-Ethylene, RAL 9002), it is 100% recyclable, resistant to all kinds of weather and an insensitive to deformation or failure. The housing comes as standard in RAL colour 9002, but other RAL colours are possible at a small surcharge.

Thanks to the unique 'mixed flow' impeller, the vertical exhaust roof fan has the highest fan efficiency and the lowest sound level. The fans come as standard with a protective grill mounted on the exhaust side. For extracting corrosive vapours, the impeller can be optionally be coated to make it corrosion-resistant. All fans have been measured under BS 848 item 1.

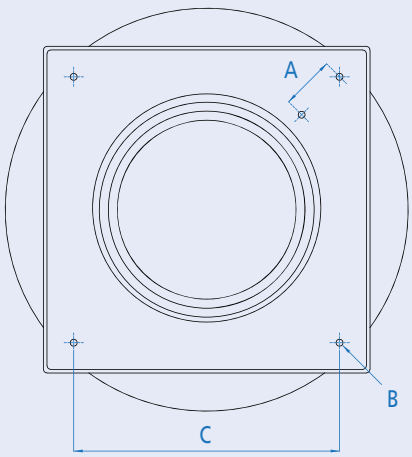
The motor is placed outside the airflow (IP55, insulation class F) and it features a thermocontact (break contact). The maximum permissible medium temperature is -30/+100 °C. The fan base can be made suitable for duct connection under the DIN standard.

ROOF FAN



Front view roof fan

ROOF FAN



Bottom view roof fan

DIMENSIONS (IN MM]

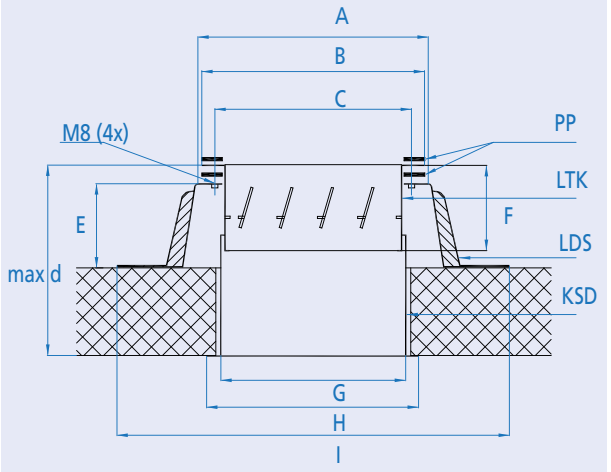
Type	A	B	C	D	E
225	622	466	415	425	40
250	710	540	435	565	40
315	768	588	500	565	40
400	860	640	550	645	40
450	990	740	640	710	50
500	1130	860	690	915	50

DIMENSIONS (IN MM]

Type	A	B	C
225	75	10.5 (4x)	330
250	100	10.5 (4x)	450
315	100	10.5 (4x)	450
400	120	10.5 (4x)	535
450	120	10.5 (4x)	590
500	180	10.5 (4x)	750

3.5 Other ventilation

ROOF FAN



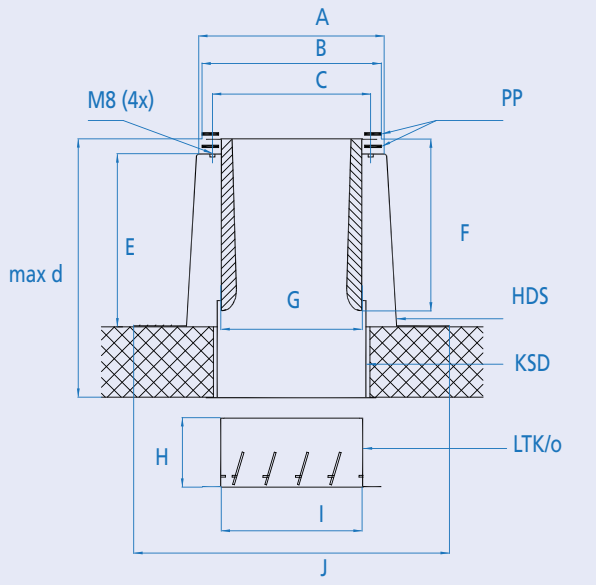
Diameter roof fan

DIMENSIONS (IN MM)

Type	A	B	C	D	E
225	380	370	330	500	200
250	530	510	450	500	200
315	530	510	450	500	200
400	600	600	535	500	200
450	680	670	590	500	200
500	870	810	750	500	200

Type	F	G	H	I
225	195	321	383	655
250	195	423	485	815
315	195	423	485	815
400	195	513	575	885
450	195	583	645	970
500	195	723	785	1150

ROOF FAN



Diameter roof fan

ROOF OPENING

Type	
225	340 x 340
250	440 x 440
315	440 x 440
400	530 x 530
450	600 mm
500	740 x 740

DIMENSIONS (IN MM)

Type	A	B	C	D	E
225	380	370	330	800	500
250	530	510	450	800	500
315	530	510	450	800	500
400	600	600	535	800	500
450	680	670	590	1000	700
500	885	810	750	1000	700

Type	F	G	H	I	J
225	495	285	195	285	720
250	495	387	195	387	860
315	495	387	195	387	860
400	495	477	195	477	940
450	695	547	195	547	1070
500	695	687	195	687	1350

3.5 Other ventilation

TECHNICAL DATA VERTICAL EXHAUST ROOF FAN, PART 1 (BRINK 225 UP TO AND INCLUDING 450)

Fan	4W	4D	6W	6D	4-4D*	4-8D**	6-6D*	6-12D**
Voltage [V]/Hz]	230/50	3 x 400/50	230/50	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50
RPM	1400	1400	900	900	1400/1150	1400/700	90/750	900/450
Brink 225								
Motor capacity [kW]	0.09	0.09	0.06	0.06	0.09/0.03	0.18/0.05	0.06/0.03	-
Current [A]	0.80	0.34	0.80	0.30	0.34/0.18	0.75/0.30	0.30/0.12	-
Weight [kg]	12	12	12	12	12	12	12	-
RPM controller	TM2-0.9	TM3-1	TM2-0.9	TM3-1	SD	DS	SD	-
Brink 250								
Motor capacity [kW]	0.18	0.18	0.06	0.06	0.18/0.06	0.18/0.05	0.06/0.03	-
Current [A]	1.80	0.63	0.85	0.31	0.63/0.34	0.85/0.35	0.31/0.13	-
Weight [kg]	15	15	15	15	15	15	15	-
RPM controller	TM2-2.2	TM3-1	TM2-0.9	TM3-1	SD	DS	SD	-
Brink 315								
Motor capacity [kW]	0.37	0.37	0.09	0.09	0.37/0.12	0.37/0.07	0.09/0.03	-
Current [A]	2.60	1.10	1.20	0.48	1.10/0.59	1.40/0.50	0.48/0.20	-
Weight [kg]	18	18	18	18	18	18	18	-
RPM controller	TM2-3	TM3-2	TM2-2.2	TM3-1	SD	DS	SD	-
Brink 400								
Motor capacity [kW]	0.55	0.55	0.18	0.18	0.55/0.18	0.55/0.09	0.18/0.06	0.37/0.075
Current [A]	3.40	1.50	1.90	0.85	1.50/0.80	1.60/0.60	0.85/0.34	1.00/0.44
Weight [kg]	21	21	20	20	21	21	20	21
RPM controller	TM2-4	TM3-2	TM2-2.2	TM3-1	SD	DS	SD	DS
Brink 450								
Motor capacity [kW]	-	1.10	0.37	0.37	1.10/0.40	1.10/0.18	0.37/0.18	0.37/0.075
Current [A]	-	2.60	2.80	1.00	2.60/1.40	2.80/1.00	1.00/0.50	1.10/0.45
Weight [kg]	-	26	25	25	26	26	25	26
RPM controller	-	TM3-3	TM2-3	TM3-2	SD	DS	SD	DS

** Two-speed with Y Δ-switch:*

*** Two-speed with Dahlander winding*

TECHNICAL DATA VERTICAL EXHAUST ROOF FAN, PART 2 (BRINK 500)

Fan	4D	4d R	6D	4-6D**	4-8D**	6-6D*	6-12D**
Voltage [V]/Hz]	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50	3 x 400/50
RPM	1400	1400	900	1400/1000	1400/700	90/750	900/450
Brink 500							
Motor capacity [kW]	2.40	3.00	0.75	3.10/1.10	3.00/0.55	0.75/0.25	0.75/0.15
Current [A]	5.30	7.50	1.90	5.30/3.10	7.30/2.70	1.90/1.00	2.40/1.00
Weight [kg]	40	44	34	40	40	34	34
RPM controller	-	INCL	TM3-2	SD	DS	SD	DS

** Two-speed with Y Δ switch:*

*** Two-speed with Dahlander winding*

3.5 Other ventilation

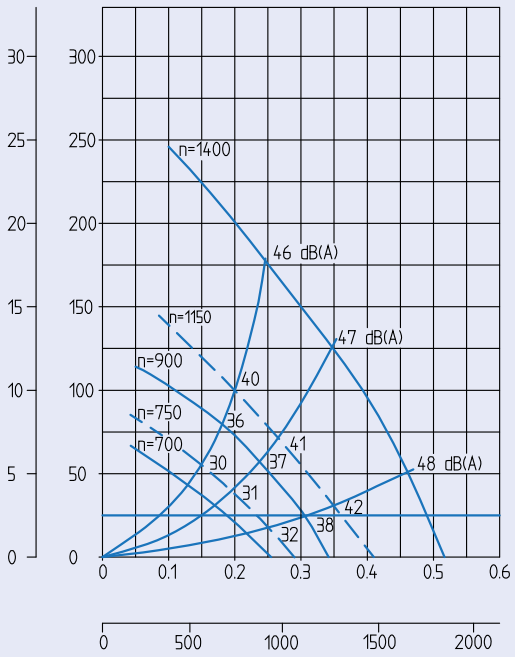
ACOUSTIC DATA

Fan	rpm	Acoustic capacity suction side (dB Ref. 10^{-12}W) in dB						
		125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Brink 225								
225/4	1400	50	60	53	59	52	48	37
225/4 + GDB 225	1400	47	53	45	47	36	34	29
225/6	900	41	52	43	49	41	36	29
225/6 + GDB 225	900	38	45	35	37	25	22	21
Brink 250								
250/4	1400	59	63	62	64	57	54	37
250/4 + GDB 250	1400	55	56	52	49	41	42	31
250/6	900	50	53	50	55	40	39	29
250/6 + GDB 250	900	46	46	40	40	24	27	23
Brink 315								
315/4	1400	61	66	63	64	58	54	40
315/4 + GDB 315	1400	57	59	53	49	42	24	34
315/6	900	52	58	52	55	42	43	31
315/6 + GDB 315	900	48	61	42	40	26	31	25
Brink 400								
400/4	1400	68	70	63	68	66	62	45
400/4 + GDB 400	1400	65	63	53	54	51	48	38
400/6	900	57	61	56	62	52	49	33
400/6 + GDB 400	900	54	54	46	48	37	35	26
Brink 450								
450/4	1400	71	70	70	72	65	64	48
450/4 + GDB 450	1400	68	64	60	57	49	49	40
450/6	900	62	61	60	62	54	52	36
450/6 + GDB 450	900	59	55	50	47	38	37	28
Brink 500								
500/4	1400	81	76	79	76	71	66	54
500/4 + GDB 500	1400	78	70	67	60	54	51	48
500/6	900	71	66	59	65	61	54	44
500/6 + GDB 500	900	68	60	57	49	44	39	38

3.5 Other ventilation

ACOUSTIC DATA

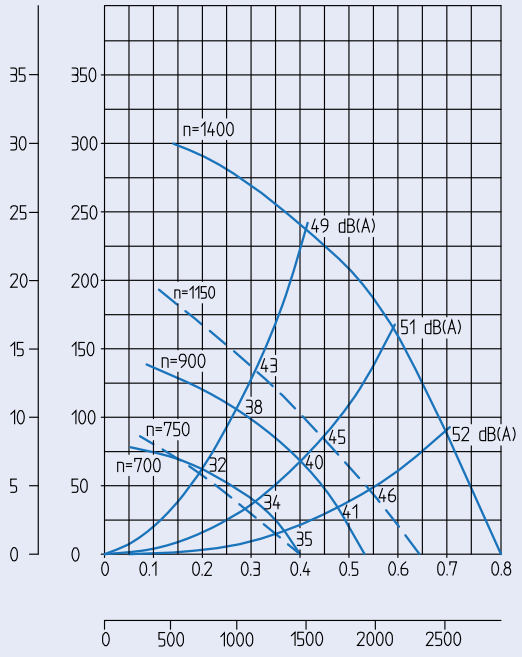
Each [mm wk]/[Pa]



Vertical exhaust roof fan Brink 225 Q_v *[m³/s]/[m³/h]*

ACOUSTIC DATA

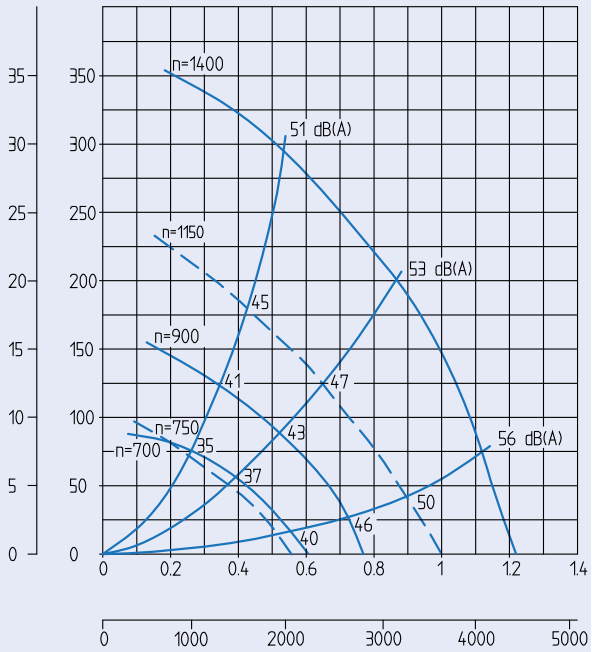
Each [mm wk]/[Pa]



Vertical exhaust roof fan Brink 250 Q_v *[m³/s]/[m³/h]*

ACOUSTIC DATA

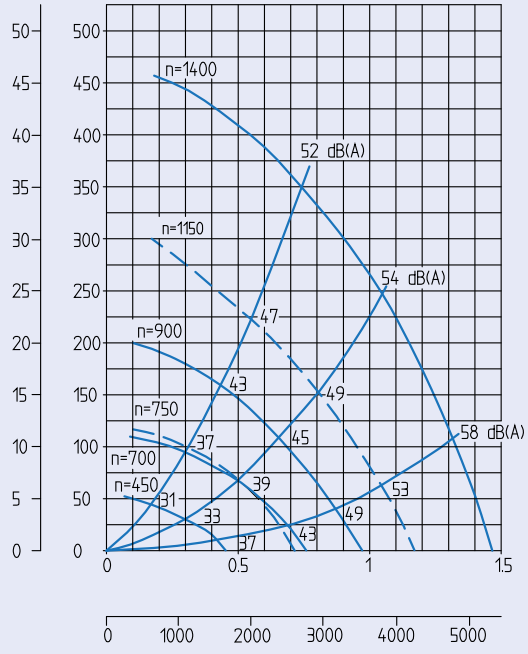
Each [mm wk]/[Pa]



Vertical exhaust roof fan Brink 315 Q_v *[m³/s]/[m³/h]*

ACOUSTIC DATA

Each [mm wk]/[Pa]

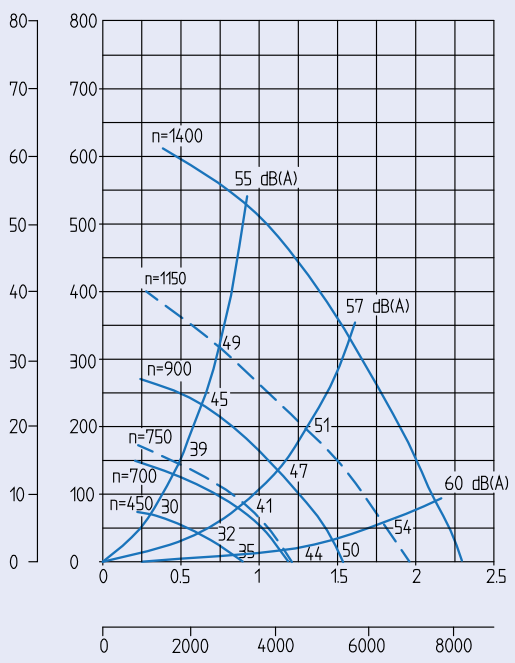


Vertical exhaust roof fan Brink 400 Q_v *[m³/s]/[m³/h]*

3.5 Other ventilation

ACOUSTIC DATA

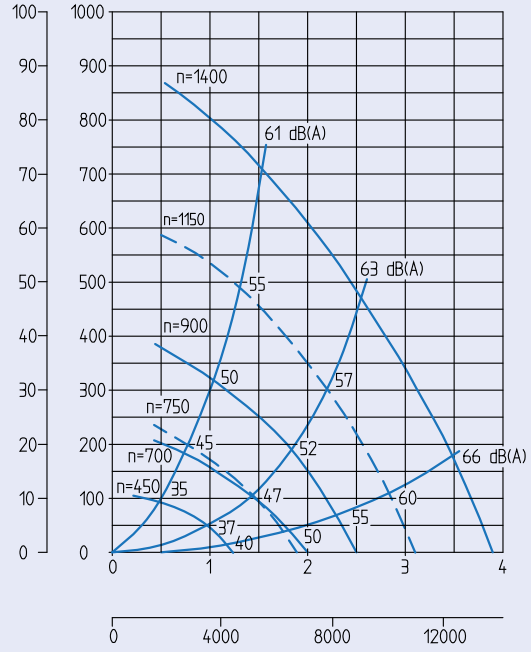
Each [mm wk]/[Pa]



Vertical exhaust roof fan Brink 450 Q_v *[m³/s]/[m³/h]*

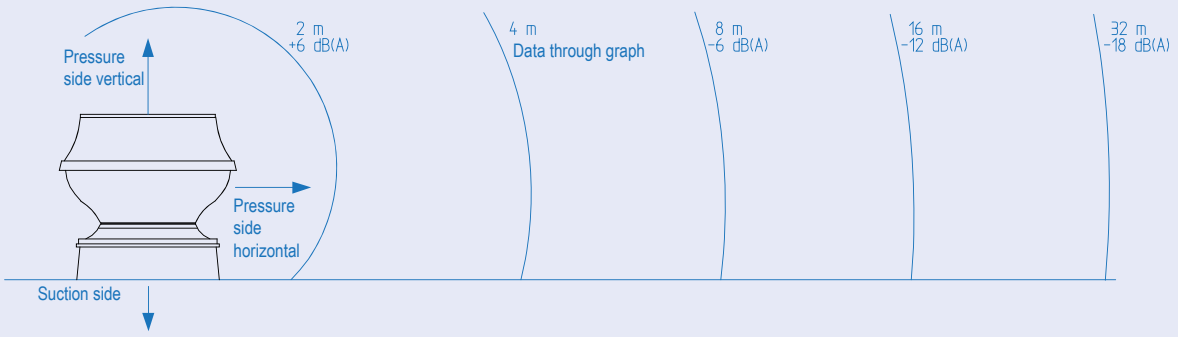
ACOUSTIC DATA

Each [mm wk]/[Pa]



Vertical exhaust roof fan Brink 500 Q_v *[m³/s]/[m³/h]*

ACOUSTIC DATA



Noise

CONTROL SYSTEM

As standard, the vertical exhaust roof fan is adjustable (transformer and electronic). The control unit is mounted on the roof fan ex factory and it is pre-programmed. The operating switch WS is mounted on the outside of the fan. There are two versions: a 3-pole version for single speed AC and three-phase motors and a 6-pole for two-speed three-phase motors (IP65). Compared to the WS, the operating switch WST features an extra overload safety.

The TM2 is a 5-way controller for 1-phase AC motors and it has a servo contact 230 V~/0.5 A. The TME2 is the same as the TM2 but the fact that the transformer can be concealed makes the TME2 specially suitable for representative areas. The controller can be operated with a 5-way switch mounted in a junction box UP50.

The TMA2 is a 5-way controller for 1-phase AC motors intended for application in combination with a 5-way thermostat type T55. The transformer in its housing can be placed in a different room than the thermostat. The controller has an option for manual operation and for automatic operation (230 V~/50-60 Hz).

The TM3 is a 5-way controller for 3-phase motors and it has a servo contact. The TME3 is similar to the TM3, but specially suitable for representative areas. The transformer in its housing can be concealed. The controller can be operated with a 5-way switch mounted in a

3.5 Other ventilation

junction box UP50.

The TMA3 is a 5-way controller for use in combination with a 5-way thermostat type T55. The controller comes with an open V-switch and the housing is splashproof IP54.

The controller has a connection for a gas valve on the servomotor 230 V~/50-60 Hz/ 0.5 A, thermal safety and a connection for motor thermo-contacts.

Switch SD is a two-speed star-delta switch. DS is a pole number switch that switches the pole number of a two-speed fan with Dahlander motor (Y/YY). Day and night switch boxes are available on request.

TECHNICAL DATA 5-WAY TRANSFORMERS

Type	Version	Height [mm]	Width [mm]	Depth [mm]	Outer casing
TM2-0.9	230 V/50 Hz/0.9 A	160	135	77	synthetic
TM2-2.2	230 V/50 Hz/2.2 A	160	135	77	synthetic
TM2-3	230 V/50 Hz/3 A	160	135	77	synthetic
TM2-4	230 V/50 Hz/4 A	235	185	158	synthetic
TM3-1	230 V/50 Hz/1 A	235	185	158	synthetic
TM3-2	230 V/50 Hz/2 A	235	185	158	synthetic
TM3-3	230 V/50 Hz/3 A	325	252	168	synthetic
TM3-7	230 V/50 Hz/7 A	300	250	160	metal

Branch voltages 230 V: 0-100-130-160-190-230 V

400 V: 0-100-125-150-220-400 V

ELECTRIC CONNECTION

The power cable can be connected directly through an operating switch or a motor safety operating switch mounted on the fan. The fan does not have to be dismounted for that purpose.

MOUNTING ACCESSORIES

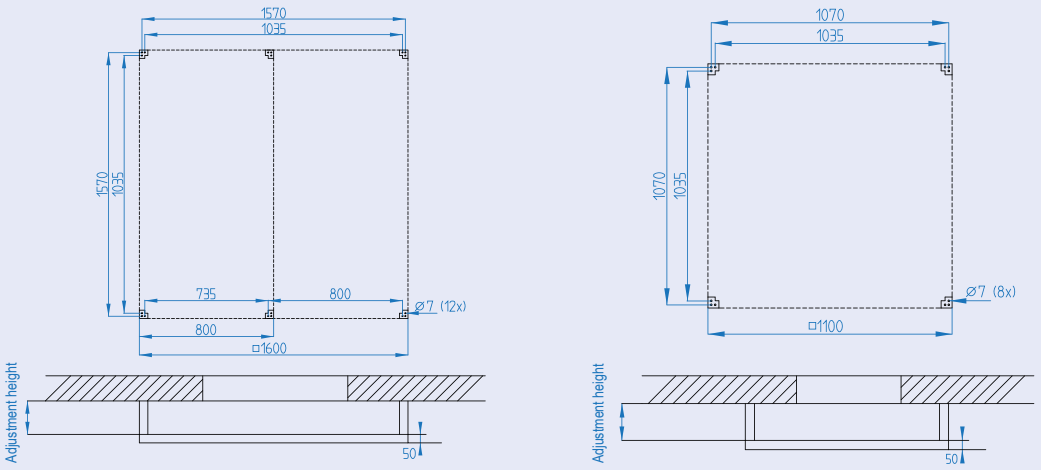
Mounting the roof fan on a flat roof requires an insulated, glassfibre-reinforced polyester rooftop fixture (LDS) (RAL 9002). If there is insufficient space under the roof fixture to place the muffler, the HDS is used. HDS is the same as LDS, but HDS is used in combination with muffler type GDB.

The muffler (GDB) for the suction side of the fan is placed directly under the fan base. The casing is made of sendzimir-galvanised sheet feel and the interior is made of sound absorbing synthetic (resistant to + 90 °C). With the special venturi shape of the sound absorbing material, the muffler does not cause pressure loss.

The sound absorbing plate for the suction side of the roof (ADP) is mounted under the suction opening in the ceiling. The ADP is made of skin-plate RAL 9002, filled with 50 mm glass wool. The sound absorbing plate can be set at the correct height using adjustable spacer brackets.

3.5 Other ventilation

SOUND-ABSORBING PLATES



TECHNICAL DATA MUFFLER PLATE

Type	Weight [kg]	Q_v m³ max. [m³/h]	Δ P bij Q_v max. [Pa]	Set height [mm]	Muffling in dB at frequency in Hz					
					125	250	500	1000	2000	4000
ADP 1100	15	600	10	40	2	7	12	22	23	20
	15	2100	20	65	1	6	11	20	20	16
	15	4500	40	90	1	4	7	15	15	13
	15	7000	65	115 (max.)	-	2	5	12	11	10
ADP 1600*	31	7000	60	120	-	2	8	16	14	12
	31	16000	60	250 (max.)	-	1	7	8	8	8

** Supplied in two parts*

MOUNTING ACCESSORIES (LTK AND MXH)

The nonreturn air diffuser (LTK) is mounted on the air inlet side. The square box with mounting flange is made of sendzimir steel and fitted with self-closing balanced synthetic diffusers and a protective cage. The diffuser opens at an air velocity of 2 m/s. If the air velocity is too low, the LTK can at a surcharge be supplied with a servomotor 230 V~/50 Hz.

The ventilation hood MXH and the roof fan are made of high-quality HDPE and a stainless steel frame. A protective grille is mounted at the top. The inflow throat is raised relative to the roof to prevent rain ingress.

MOUNTING ACCESSORIES (PP AND KSD)

The gasket plate (PP) made of weather resistant, closed-cell synthetic foam is placed between the fan base and accessories as well as mutually between accessories.

The sliding box section (KSD) is a square box (length 310 mm) used as extension for LTK and GDB. The KSD is placed from below. A rubber profile provides an effective airtight seal between roof and ceiling.

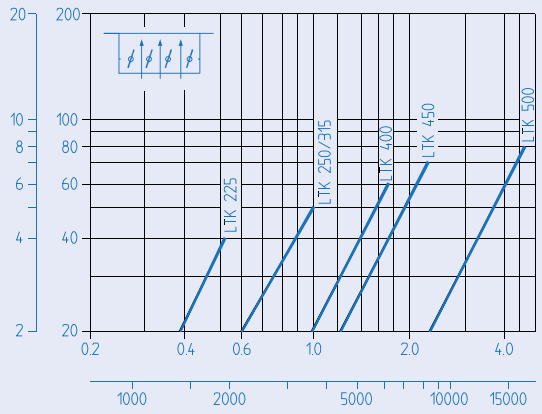
3.5 Other ventilation

AIR FLOW RATES CHECK VALVE LTK

Check valve LTK	225	250/135	400	450	500
Minimum air flow rate [m³/h]	500	950	1500	1800	3200

PRESSURE LOSSES

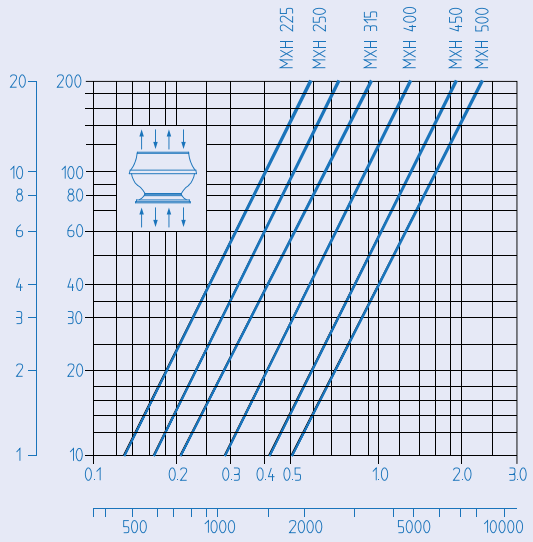
Each [mm wk/wa]/[Pa]



Pressure losses LTK Q_v *[m³/s]/[m³/h]*

PRESSURE LOSSES

Each [mm wk/wa]/[Pa]



Pressure losses MXH Q_v *[m³/s]/[m³/h]*

3.5 Other ventilation

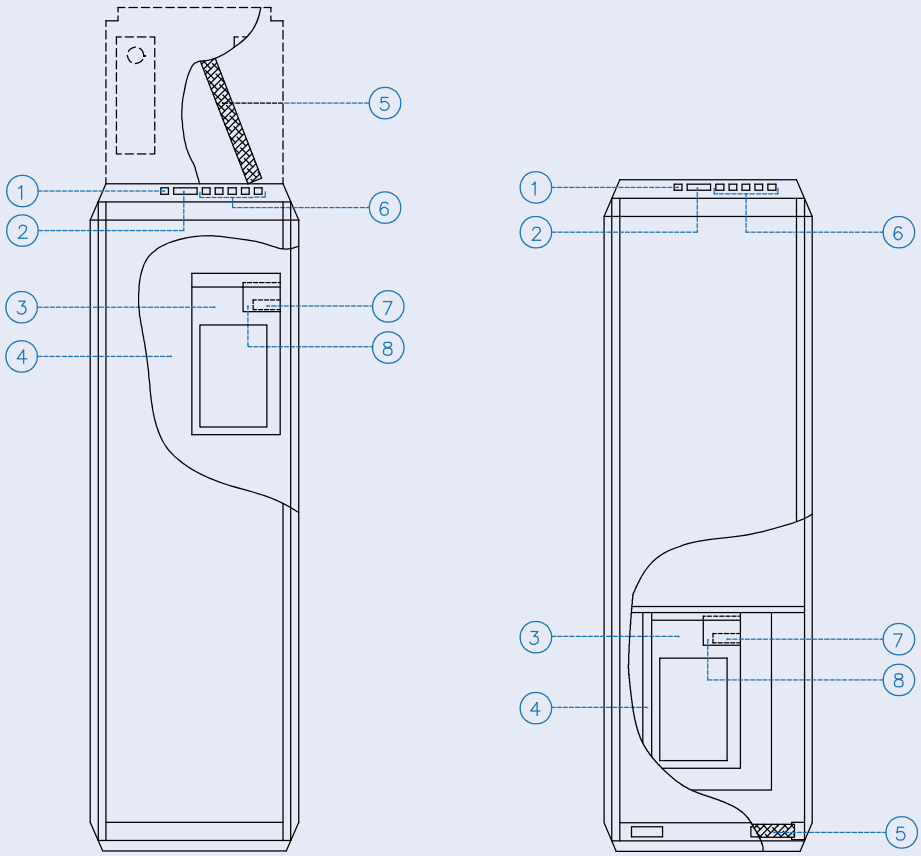
3.5.3 FAN CASING ALLURE

GENERAL INFORMATION

THE FAN CASING

The fan casing for the Allure B-40 HR(D) is available in Upflow as well as Downflow version. The fan casing for the Allure B-25 is only available in Upflow. Allure's sheet steel body is epoxy-coated in cream (RAL 1013).

FAN CASING



Front view fan casing Allure

PARTS

1	Reset button
2	Display
3	Switchbox
4	System fan (for Downflow behind front)
5	Filter
6	Control Panel
7	Connection temperature sensor (T_3)
8	Connection mains power: 230 V

3.5 Other ventilation

TECHNICAL DATA FAN CASING		
Technical data	B-25 HR	B-40 HR(D)
Nominal electric rated power [kW]	0.26	0.60
Maximum air flow rate [m³/h]	450 - 2100	750 - 3400
Maximum safety [°C]	100	100
Width [mm]	500	600
Height [mm]	1200	1200
Depth [mm]	740	740
Weight [kg]	55	60
Supply voltage [V~/Hz]	230/50	230/50
Protection degree	IP30	IP30

4.1 Air heating

CLIMATE OK INDOOR CLIMATE WITH AIR HEATING

Modern dwellings are built with optimum insulation and almost without any cracks. That saves a lot of energy. But the almost complete elimination of unintended ventilation through cracks has an adverse influence on the indoor environment. Air heating brings a healthy oxygen content, improved air purity, no dust, and improved humidity control. In short: the indoor climate is Climate OK.

In addition, air heating offers a constant and pleasant air circulation, cosy and warm or refreshingly cool. Heating in winter but also cooling in summer. All this is possible with one system for heating, cooling and ventilating in every room of the high-efficiency dwelling.

Application of balanced ventilation with heat recovery is recommended. Through a sophisticated heat recovery system, the fresh air takes over the thermal energy from the air that leaves your home. Brink Climate Systems offers direct-fired and indirect-fired appliances.

Inconspicuous grilles and a simple ducts system suffice to fully benefit from the advantages of air heating, throughout the dwelling. The intelligent control system heats the spaces almost unnoticeably. It operates trouble-free and requires the least possible maintenance.

ADVANTAGES AIR HEATING

- You can opt for one system that can do it all: heating, cooling, ventilating, filtering
- An optimum indoor climate in every season
- Every room quickly to the required temperature
- Absence of radiators makes for great design freedom
- Fresh air 24 hours a day
- Low energy consumption through heat recovery
- Ecologically sound
- Very low noise level
- Simple control
- Low-maintenance
- Constant air circulation evenly distributes the heat of other energy sources such as solar radiation, fireplace or wood stove, throughout the dwelling.

At Brink Climate Systems, corporate social responsibility is the driving force behind all innovation. The environment is very important in this connection. Air heating in combination with heat recovery results in major savings on heating costs. And that means economic use of fossil fuels.

4.2 Indirect-fired appliances

4.2.1 BQLS

GENERAL INFORMATION

BQLS, BRINK QUALITY OF LIFE SYSTEM

BQLS is a modular concept for highly comfortable and energy-friendly heating, cooling and ventilating of dwellings. BQLS is built around the series Elan Duo 2-zone air heaters. As standard, it has two independently operating zones for heating or cooling. One for the living zone and one for the sleeping zone. A Renovent HR heat recovery unit recovers the heat from the ventilation air and the heat source is a Brink 36/30 HRE central heating appliance integrated DHW supply class CW-5. The complete installation is connected to a central control panel, the Climate Master. The Climate Master automatically controls all necessary functions for heating, cooling and ventilating. The basic installation can be extended as required with many options such as cooling and heating by means of a heat pump, underfloor heating, an electronic air filter and a solar water heater for additional hot water comfort. We can also offer a Brink 28/24 HRE central heating appliance.

WIDELY APPLICABLE IN NEW PROJECTS AND RENOVATION

Its modular design makes BQLS suitable for almost all types of dwellings and comfort levels: from mass production to (very) luxurious dwellings and for new projects as well as renovation and renewal projects. From basic to all-in comfort systems and everything in between. Extra functionalities and comfort can also be added when replacing an existing installation.

TECHNICAL INFORMATION

AIR HEATERS

Appliance type	Elan Duo 10 2-zone* zone 1 and 2		Elan Duo 16 2-zone* zone 1 and 2		Elan 22 Duo 2-zone zone 1		Elan 22 Duo 2-zone zone 2	
	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum
Air flow rate per zone [m³/h]	350	400	600	750	1000	1200	600	750
Heating capacity per zone [kW]	5.1	5.7	8.4	10.1	12.7	14.6	8.4	10.1
Rated power fan [W]	50	60	80	150	200	350	80	150
Water temperature range [°C]	70/50		70/50		70/50		70/50	
Water connection [mm]	22		22		22		22	
H X W X D [mm]	787 x 678 x 526		967 x 678 x 583		1112 x 768 x 583		1112 x 768 x 583	
Weight [kg]	40		44		48		48	

** The technical data for zone 1 and 2 are the same for these appliances*

HEAT RECOVERY APPLIANCES

Renovent HR	Medium	Large
Ventilation capacity at 150 Pa [m³/h]	Maximum 300	Maximum 400
Rated power [W] (dependent on setting)	180 at 300 m³/h at 170 Pa)	304 at 400 m³/h at 150 Pa)
Dimension duct connection [mm]	Ø 150 and Ø 160	Ø 160 and Ø 180
H X W X D [mm]	602 x 675 x 420 (met bypass 500)	602 x 675 x 430 (met bypass 510)
Weight [kg]	31	32
Temperature efficiency [%]	95	95

4.2 Indirect-fired appliances

TECHNICAL INFORMATION

HEAT SOURCE		
Brink HRE central heating appliance	36/30 HRE	28/24 HRE
Nom. load upper value [kW]	8.0 - 36.3	7.9 - 33.1
Nom. load lower value [kW]	7.2 - 32.7	7.1 - 29.9
Nom. capacity at 80/60 [kW]	7.1 - 26.3	6.9 - 22.8
Nom. capacity at 50/30 [kW]	7.8 - 27.1	7.6 - 23.4
Use efficiency HR Heating (Hi) [%]	107	107
Use efficiency HR Hot water (Hi) [%]	95.8	93.9
Generation efficiency central heating is EPS (Hs)	0.95	0.95
Annual tap efficiency EPS (Hs)	0.85	0.825
Tap threshold [l/min.]	2	2
Gas mark CW class	5	4
DHW quantity 60 °C [l/min.]	9	7.5
DHW quantity 40 °C (mixed) [l/min.]	15	12.5
Max. DHW temperature [°C]	60	60
Weight [kg]	36	33
W x H x D [mm]	450 x 710 x 240	650 x 450 x 240
Propane version	on request	on request

CLIMATE MASTER

The Climate Master arranges the necessary communication between the various installation components. Everything is perfectly geared for each other, both technically and aesthetically, which results in a logical and neatly arranged complete installation. As standard, the Climate Master offers many control options, ruling out the need for further programming. For instance, as standard two or four heating zones can be controlled completely independently.

THE BQLS BASIC PRINCIPLE AIR HEATING

The air heating system gives a constant and pleasant air circulation throughout the dwelling on the basis of fresh and filtered air. Cosy and warm in winter and pleasantly cool in summer. The Renovent HR and the ventilation provisions ensure that smells and vapours from kitchen, bathroom and toilet are carried off to the atmosphere. The system of continuous ventilation and filtering keeps the air fresh and unwanted dust particles out of the door. The slowly circulating air quickly brings the dwelling to the desired temperature. The system is controlled by the Climate Master. It comes in two versions: the Duo (for 2 zones) and the Multi (for 4 zones).

AIR HEATER ELAN DUO 2-ZONE AIR HEATER

The room temperature in two zones can be controlled completely independently. That way for instance the living and sleeping zones can get their own temperature control.

THE BQLS BASIC PRINCIPLE BALANCED VENTILATION WITH HEAT RECOVERY

The quantity of exhaust indoor air is exactly matched to the quantity of fresh, clean outdoor air that is supplied, so there is a steady balance.

Brink balanced ventilation is combined with heat recovery. A specially developed heat exchanger makes sure that the heat of the exhaust air is transferred to the supplied outdoor air. The foul and humid air from bathroom, kitchen and toilet goes out the door and the valuable heat stays in. The heat recovery unit Renovent HR keeps 95% of the heath in the dwelling that otherwise would have gone to waste.

4.2 Indirect-fired appliances

THE HEAT RECOVERY UNIT RENOVENT HR

Renovent HR has specially been designed for balanced ventilation with heat recovery. Application of low-energy direct current fans limits the power consumption to the minimum and makes for a very low-noise operation is. The air flow rate is easily adjustable on the display. Standard operation is through a 3-way switch that is usually placed in the kitchen. An additional wireless remote control is optional.

THE DOUBLE HIGH EFFICIENCY BRINK HRE HOT WATER APPLIANCE

The Brink HRE central heating appliance is based on the Intergas Kombi Kompakt. This is an appliance with a high efficiency for heating as well as a high efficiency for domestic hot water. Its secret is in the unique double two-in-one heat exchanger. This heat exchanger limits heat losses to the minimum and ensures maximum heat exchange. The central heating water and the cold domestic water flow directly through the heat exchanger to maximally cool the flue gases and optimally utilise the condensation heat.

UNDERFLOOR HEATING

Combining the ELAN with underfloor heating ensures increased comfort in rooms with stony floors such as tiles or natural stone. Independently controlled heating zones, for instance in the living room and bathroom, can also be used with underfloor heating. The underfloor heating can also 'tag along' with the air heating.

BQLS IN COMBINATION WITH A HEAT PUMP

BQLS comes as standard with the Brink HRE central heating appliance. This appliance has a maximum central heating capacity of about 30 kW. For domestic hot water supply the appliance has a capacity of 36 kW. This capacity is mainly required for comfortable domestic hot water supply. If added to the installation, a heat pump can heat the dwelling for the largest part of the heating season. That way the heat pump with a relatively low capacity makes a major contribution to a reduction of the energy consumption and CO_2-emission.

THE BRINK CHARGING WATER HEATER

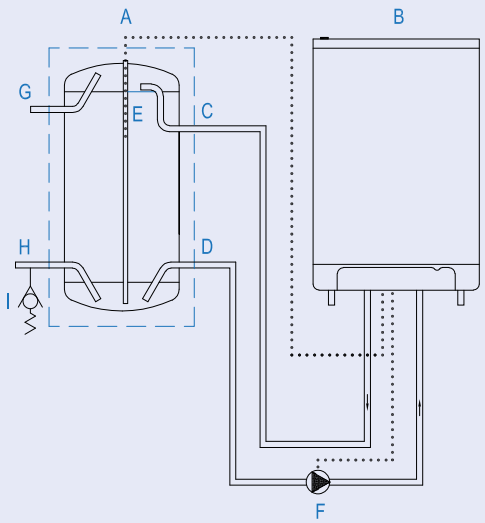
The Brink charging water heater is made of stainless steel and has a capacity of 100 litres. Effective, smooth surface, no sacrificial anode, strong and light are the features of the charging water heater. The entire stock can be tapped. The water heater cannot be "fully drained" because it is layered. The water heater is insulated to limit heat losses. The burner controller of the Brink Kombi Kompakt HRE comes as standard with water heater control.

The Brink charging water heater together with the Brink HRE central heating is the optimum combination. That gives you maximum generation yield because the water heater does not contain an exchanger, but the water is directly heated by the Brink HRE central heating appliance.

INSTALLATION CHARGING WATER HEATER

The inlet and outlet of the Brink charging water heater are marked for simple and error-free installation. We commend to place the Brink charging water heater not too far from the central heating appliance.

CHARGING WATER HEATER WITH HIGH-EFFICIENCY CENTRAL HEATING BOILER

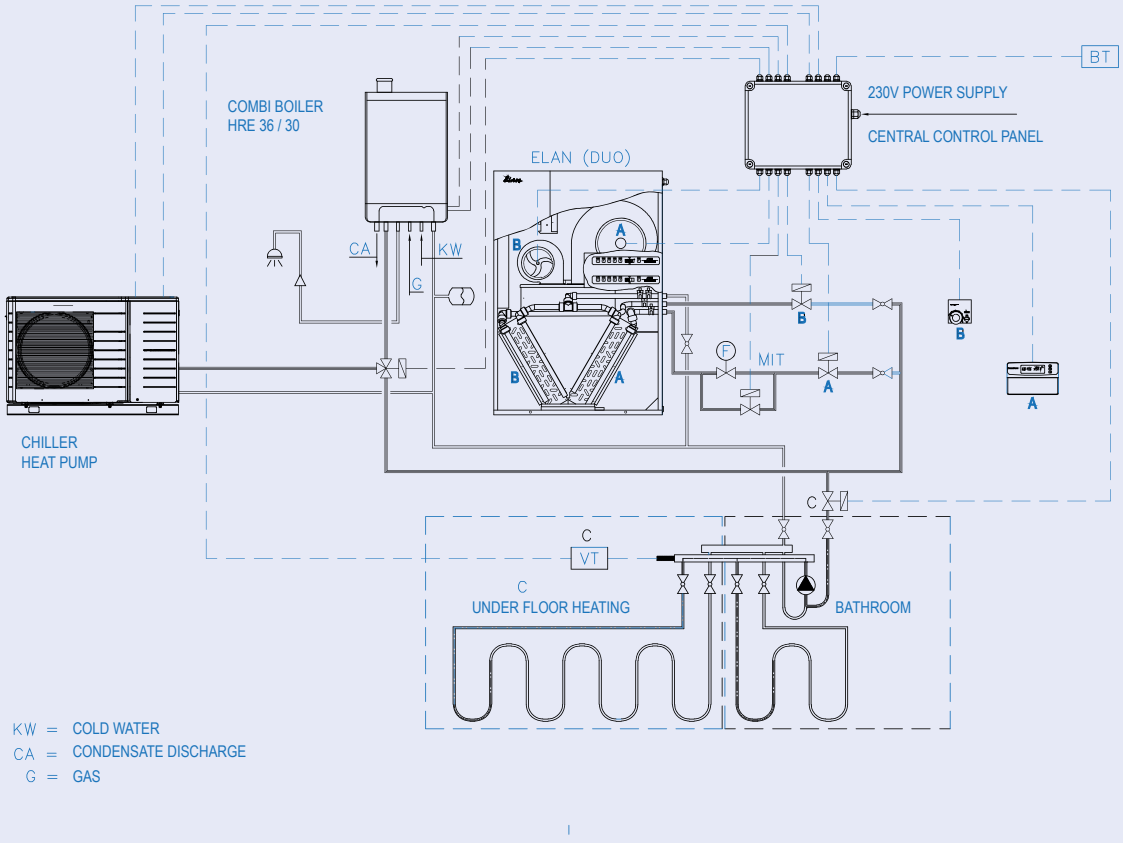


PARTS

A	Charging water heater
B	Central heating boiler
C	Supply by central heating boiler
D	Return through central heating boiler
E	Water heater sensor DHW
F	DHW pump
G	DHW connection
H	Cold water connection
I	Inlet combination 8 bar

4.2 Indirect-fired appliances

HYDRAULIC DIAGRAM



Hydraulic diagram BQLS

4.2 Indirect-fired appliances

4.2.2 ELAN APPLIANCES GENERAL

GENERAL INFORMATION

THE ELAN APPLIANCE

The Elan appliances are indirectly fired air heaters used when hot water is the energy carrier (Brink central heating or district heating). Elan heating/cooling appliances have specially been developed to operate in combination with a heat pump.

Elan Duo 2-zone appliances can control the temperature independently in two zones. ELAN Duo 2-zone appliances feature two heat exchangers and two fans. That allows either different heating or different cooling of two zones.

Application of a low-energy fan leads to a low power consumption of the Elan appliances. The sheet steel body of the air heater is epoxy-coated in a cream colour (RAL 1013) and it has a dark-blue filter door. The heat exchanger capacity is geared for a water temperature range of 70/50 °C. The air supply temperature may be 50 °C, but lower temperatures can be realised with the aid of a mixing diffuser. The heat exchanger is composed of copper tubes with specially designed aluminium baffles. This results in optimum heat transfer, while the airside and waterside resistances are minimal.

VERSIONS

Elan 10 and Elan 25 come in two versions. The Elan Upflow blows out the hot air at the top and the Downflow blows out at the bottom. ELAN heating/cooling appliances, ELAN SWB appliances and ELAN Duo 2-zone appliances are only available in Downflow version.

ELAN appliances come in a left-handed or right-handed version.

OVERVIEW ELAN

	1-zone heating	1-zone heating/cooling	2-zones heating/cooling
ELAN-10 Left-handed (Upflow)	•		
ELAN-10 Right-handed (Upflow)	•		
ELAN-10 Left-handed (Downflow)	•		
ELAN-10 Right-handed (Downflow)	•		
ELAN-25 Left-handed (Upflow)	•		
ELAN-25 Right-handed (Upflow)	•		
ELAN-25 Left-handed (Downflow)	•		
ELAN-25 Right-handed (Downflow)	•		
ELAN-SWB Left-handed	•		
ELAN-SWB Right-handed	•		
ELAN-10 heating/cooling 1-zone Left-handed		•	
ELAN-10 heating/cooling 1-zone Right-handed		•	
ELAN-25 heating/cooling 1-zone Left-handed		•	
ELAN-25 heating/cooling 1-zone Right-handed		•	
ELAN-10 Duo 2-zone Left-handed			•
ELAN-10 Duo 2-zone Right-handed			•
ELAN-16 Duo 2-zone Left-handed			•
ELAN-16 Duo 2-zone Right-handed			•
ELAN-22 Duo 2-zone Left-handed			•
ELAN-22 Duo 2-zone Right-handed			•

4.2 Indirect-fired appliances

TECHNICAL INFORMATION

EXTENSION WITH RENOVENT HR

Elan Downflow appliances can easily be extended with a Renovent HR with three connections at the top and one at the bottom. The Renovent HR is placed on top of the Elan. This combines the heating system with balanced ventilation with heat recovery (see also chapter 'Renovent HR').

With their identical designs, the two appliances together form one optical whole.

CONTROL SYSTEM

Elan comes as standard with a modulating control unit for the system fan. The moment when the system fan rpm begins to increase, depends on the setting. When the air in the appliance has heated up sufficiently, the temperature sensor sends a signal to the system fan to increase its rpm.

With the modulating control system the Elan can adjust to the optimum operating setting in every situation. The Elan appliances feature a control display on which all settings can be made.

INSTALLATION ELAN

The Elan must be placed as close as possible to the hot water supply and exhaust. The right-handed version has the water connection and the electric connections to the appliance on the left-hand side.

In addition, the Elan must be placed as centrally as possible relative to the air ducts. Be sure to leave sufficient room for maintenance, at least 1 m free space and 1.80 m headroom at the front of the appliance. The Elan must also remain free from the wall and the ceiling. It is important that the air heater is in a frost-free room. If the floor is humid, the air heater must be placed above floor level. In addition, it is important to place the appliance level.

If the air heater is equipped with an open return, the installation room must have an open connection with the rest of the dwelling. In that case an acoustic return plate is necessary.

The appliance's power cord with plug is connected to an earthed wall socket (230 V) that must be easily accessible under all conditions.

CONNECTING DUCTS

A standard output module is available for the Elan. It is placed under the appliance. The various ducts are connected to this output module. The heat exchanger in the Elan is connected using a ¾" and a 1" connection respectively. Elan Duo appliances can directly be connected using a '22 mm' line. It is recommended to place stop cocks with couplings directly on the outside of the appliance in the supply as well as the return lines.

Each branch of the exhaust module or the main duct must be provided with a control diffuser. In addition, all hot air ducts (including the grille shoes and the outdoor air duct) must be insulated. To prevent moisture absorption from the ambient air, the insulation material must be provided with a moisture barrier. Be sure to lay out the return ducts in such a manner that they do not become sound bridges. That means a straight connection between two rooms is not permitted.

CONNECTING THE RETURN AT THE TOP

Accessories are available for the Elan Downflow and Upflow to realise the return connections at the top and the bottom. A special filter unit and various return air units in a variety of sizes are available.

CONNECTION OPTIONS RETURN AIR

The return is connected to the right-hand side of the appliance for the right-handed version. The return is connected to the left-hand side for the left-handed version. Before the outdoor air duct is connected to the return duct or the acoustic return plate, it must be provided with an adjustment diffuser.

(EXTRA) AIR FILTERING

The standard filters for the Elan appliances (class G3) are flat filters. For Elan 10, Elan 25, Elan 10 Duo and Elan 25 Duo a separate filter section is available for an electronic filter (fine dust filter). This fine dust filter is ideal for people with asthmatic problems.

DESIGN SOLUTION INDUSTRIAL APPLICATIONS

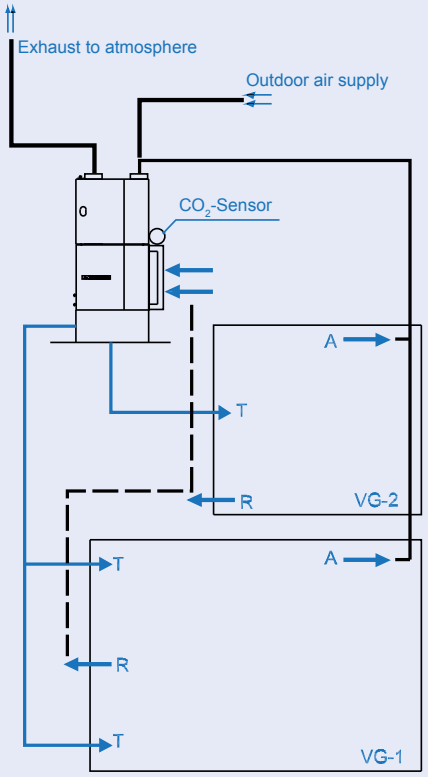
The Elan air heater and the air nozzle have been combined to develop a high-efficiency solution for heating large assembly spaces, shops, showrooms, workshops and warehouses. The relatively simple installation options offer ample industrial application options for heating well-insulated industrial and business buildings. You will find more information in the chapter 'Allure'.

4.2 Indirect fired appliances

EASE OF VENTILATION, ENERGY ECONOMY AND EPS GAIN

If an air heater is installed in combination with a Renovent HR, adding a CO_2-sensor in the return air flow enables demand-controlled ventilation. Moreover, this feature creates additional EPS gains of about 0.06. For that purpose Renovent HR must be equipped with an option pcb.

DEMAND CONTROL



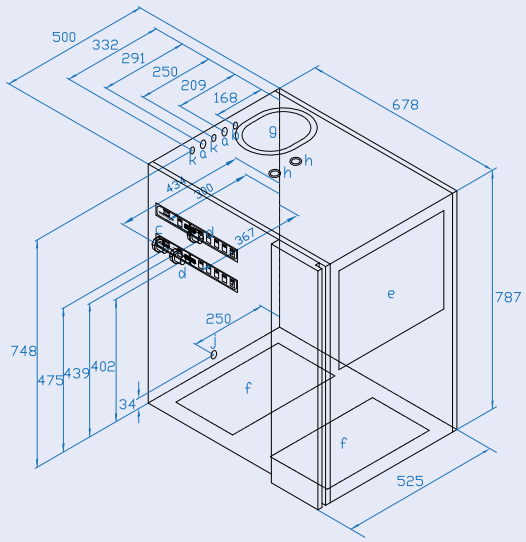
Principle demand control

4.2 Indirect-fired appliances

4.2.3 ELAN DUO

GENERAL INFORMATION

ELAN 10 DUO 2-ZONE

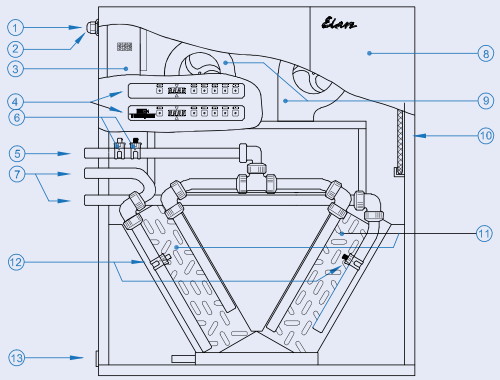


Elan 10 Duo, 2-zone R

SLEEVES

a	Sleeve condensate discharge heat recovery
b	Sleeve power cable 230V
c	Water connection return
d	Water connection supply
e	Input opening return air, 399 x 327 mm
f	Nozzle opening zone 1 and zone 2, 389 x 216 mm (2x)
g	Connection heat recovery (if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)
j	Sleeve condensate discharge Elan Duo
k	Sleeve cable option

ELAN 10 DUO 2-ZONE



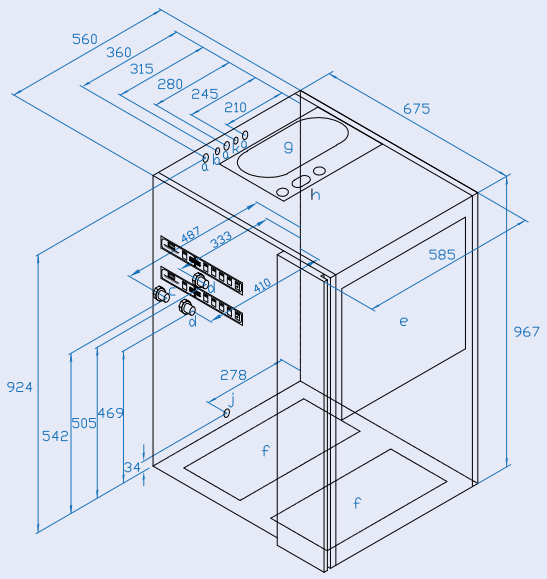
Front view Elan 10 Duo, 2-zone R

PARTS

1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with dual control unit
4	Control Panel
5	Water connection (return)
6	Return temperature sensor
7	Water connection (supply)
8	Filter door
9	System fans
10	Filter
11	Heat exchanger
12	System temperature sensors
13	Sleeve condensate discharge

4.2 Indirect-fired appliances

ELAN 16 DUO 2-ZONE

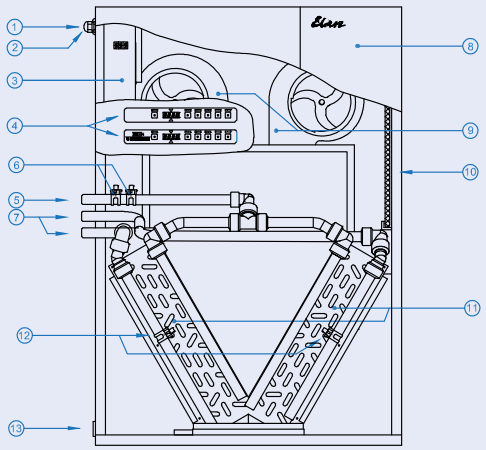


Elan 16 Duo, 2-zone R

SLEEVES

a	Sleeve condensate discharge heat recovery
b	Sleeve power cable 230V
c	Water connection return
d	Water connection supply (zone 1 and zone 2)
e	Input opening return air, 470 x 433 mm
f	Nozzle opening zone 1 and zone 2, 456 x 216 mm (2x)
g	Connection heat recovery (if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)
j	Sleeve condensate discharge Elan Duo
k	Sleeve cable option

ELAN 16 DUO 2-ZONE



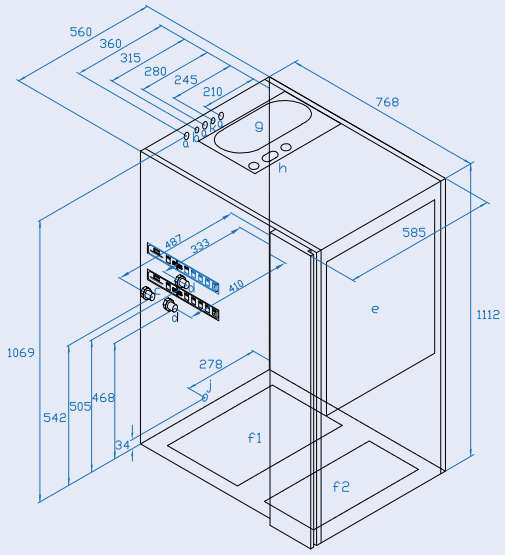
Front view Elan 16 Duo, 2-zone R

PARTS

1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with dual control unit
4	Control Panel
5	Water connection (return)
6	Return temperature sensor
7	Water connection (supply)
8	Filter door
9	System fans
10	Filter
11	Heat exchanger
12	System temperature sensors
13	Sleeve condensate discharge

4.2 Indirect fired appliances

ELAN 22 DUO 2-ZONE

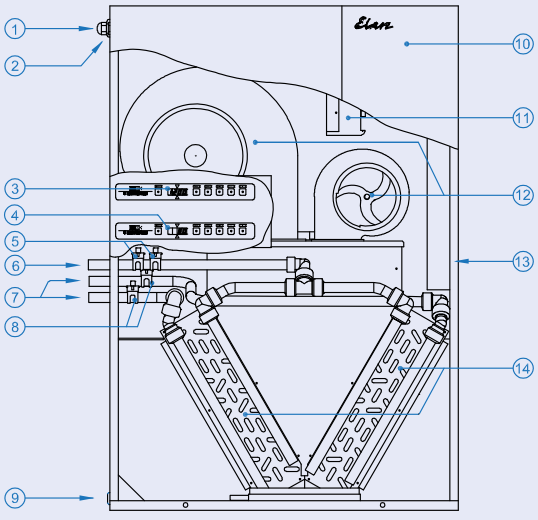


Elan 22 Duo, 2-zone R

SLEEVES

a	Sleeve condensate discharge heat recovery
b	Sleeve power cable 230V
c	Water connection return
d	Water connection supply
e	Input opening return air, 578 x 470 mm
f1	Nozzle opening zone 1, 456 x 306 mm
f2	Nozzle opening zone 2, 456 x 216 mm
g	Connection heat recovery (if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)
j	Sleeve condensate discharge Elan Duo
k	Sleeve cable option

ELAN 22 DUO 2-ZONE



Front view Elan 22 Duo, 2-zone R

PARTS

1	Sleeve power cable 230V
2	Sleeve condensate discharge heat recovery (if applicable)
3	Control panel zone 1
4	Control panel zone 2
5	Return temperature sensor
6	Water connection (return)
7	Water connection (supply)
8	System temperature sensor
9	Sleeve condensate discharge
10	Filter door
11	Switchbox with 2 x control unit
12	System fans
13	Filter
14	Heat exchanger

4.2 Indirect fired appliances

TECHNICAL SPECIFICATIONS ELAN 10 DUO AND ELAN 16 DUO 2-ZONE

Appliance type	Elan Duo 10 2-zone		Elan Duo 16 2-zone	
	Nominal	Maximum	Nominal	Maximum
Air flow rate [m³/h]	350	400	600	750
Heating capacity [kW]	5.1	5.7	8.4	10.1
Water capacity [l/h]	222	248	366	440
Waterside resistance [kPa]	0.5	0.7	0.4	0.5
Rated power fan [W]	50	60	80	150
Water temperature range [°C]	70/50	70/50	70/50	70/50
Air supply temperature [°C]	18	18	18	18
Supply voltage [V~/Hz]	230/50		230/50	
Maximum operating pressure exchanger [bar]	6		6	
Water capacity exchanger [l]	2		3	
Protection degree	IP20		IP20	
Water connection socket joint [mm]	22		22	
Weight [kg]	40		44	

TECHNICAL SPECIFICATIONS ELAN 22 DUO 2-ZONE

Appliance type	Elan 22 Duo 2-zone			
	Nominal per zone 1	Maximum per zone 1	Nominal per zone 2	Maximum per zone 2
Air flow rate [m³/h]	1000	1200	600	750
Heating capacity [kW]	12.7	14.6	8.4	10.1
Water capacity [l/h]	552	634	366	440
Waterside resistance [kPa]	0.8	1.0	0.4	0.5
Rated power fan [W]	200	350	80	150
Water temperature range [°C]	70/50		70/50	
Air supply temperature [°C]	18		18	
Supply voltage [V~/Hz]	230/50		230/50	
Maximum operating pressure exchanger [bar]	6		6	
Water capacity exchanger [l]	3		3	
Protection degree	IP20		IP20	
Water connection socket joint [mm]	22		22	
Weight [kg]	48		48	

4.2 Indirect-fired appliances

CAPACITY TABLE HEATING AND COOLING CAPACITY PER ZONE
ELAN DUO 10 2-ZONE

	Water in [°C]	Water out [°C]	Air flow rate in [m³/h] per zone						Power levels at different return air temperatures [°C]			
			300 [kW]	300 [l/h]*	350 [kW]	350 [l/h]*	400 [kW]	400 [l/h]*	16	20	22	28
Heating	70	50	4.5	195	5.1	222	5.7	248	+5%	-5%	-10%	
Return air:	55	45	3.3	289	3.8	331	4.3	371	+6%	-5%	-10%	
18 °C	50	40	2.8	244	3.2	278	3.6	312	+8%	-8%	-16%	
RH** 50%	50	35	2.6	148	2.9	168	3.2	187	+10%	-8%	-16%	
	45	35	2.3	198	2.6	226	2.9	252	+10%	-8%	-16%	
	40	33	1.9	236	2.2	270	2.5	302	+11%	-10%	-20%	
	35	30	1.5	257	1.7	294	1.9	329	+15%	-13%	-26%	
	30	26	1.1	308	1.2	252	1.3	281	+20%	-19%	-38%	
Free cooling	14	17	0.8	241	1.0	275	1.1	308				+30%
Return air:	12	16	1.0	212	1.1	242	1.3	270				+35%
24°C RH** 50%	10	14	1.1	239	1.4	290	1.5	325				+40%
Cooling	6	12	1.7	247	1.9	277	2.1	305				+40%
Return air:												
24°C RH** 50%												

** Water capacity*

*** RH = Relative Humidity*

CAPACITY TABLE HEATING AND COOLING CAPACITY PER ZONE
ELAN DUO 16 2-ZONE

	Water in [°C]	Water out [°C]	Air flow rate in [m³/h] per zone						Power levels at different return air temperatures [°C]			
			400 [kW]	400 [l/h]*	600 [kW]	600 [l/h]*	750 [kW]	750 [l/h]*	16	20	22	28
Heating	70	50	6.0	260	8.4	366	10.1	440	+5%	-5%	-10%	
Return air:	55	45	4.5	387	6.4	551	7.7	665	+8%	-8%	-16%	
18 °C	50	40	3.8	326	5.3	461	6.4	555	+8%	-8%	-18%	
RH** 50%	50	35	3.4	196	4.7	272	5.6	325	+10%	-9%	-16%	
	45	35	3.1	264	4.3	371	5.2	445	+10%	-10%	-20%	
	40	33	2.6	315	3.6	445	4.3	535	+12%	-11%	-22%	
	35	30	2.0	343	2.8	486	3.4	585	+15%	-14%	-28%	
	30	26	1.4	294	1.9	413	2.3	496	+18%	-20%	-40%	
Free cooling	14	17	1.1	321	1.6	452	1.9	543				+30%
Return air:	12	16	1.3	281	1.8	395	2.2	472				+35%
24°C RH** 50%	10	14	1.6	338	2.2	477	2.7	572				+40%
Cooling	6	12	2.2	318	3.0	426	3.5	496				+40%
Return air:												
24°C RH** 50%												

** Water capacity*

*** RH = Relative Humidity*

4.2 Indirect-fired appliances

CAPACITY TABLE HEATING AND COOLING CAPACITY PER ZONE ELAN 22 DUO 2-ZONE (ONLY FOR ZONE 1) (FOR ZONE 2, SEE ELAN 16 DUO)

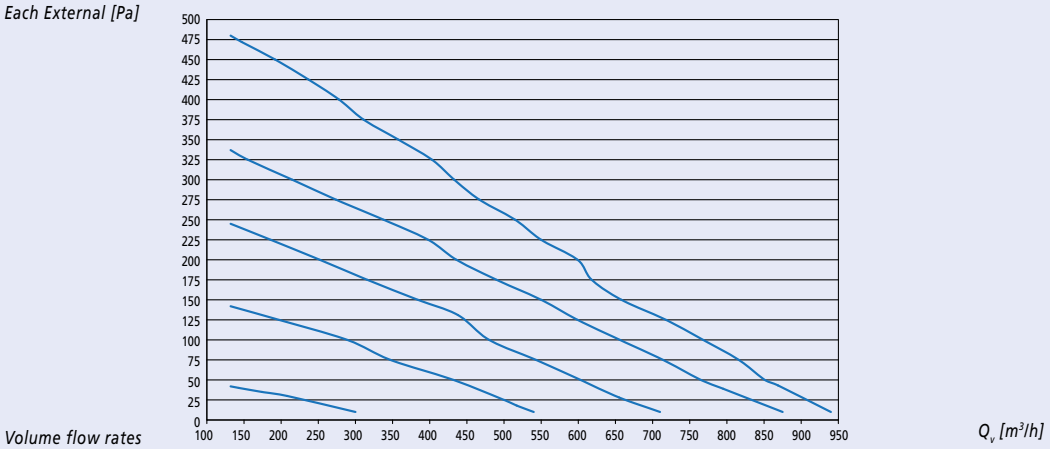
	Water in [°C]	Water out [°C]	Capacity zone 1 at 1000 [m³/h] kW	Water capacity lh	Capacity zone 1 at 1200 [m³/h] kW	Water capacity lh
Heating	70	50	12.7	552	14.6	634
Return air:	55	45	9.7	840	11.2	969
18 °C	50	40	8.1	699	9.3	805
RH 50%	50	35	7.0	404	8.0	461
	45	35	6.5	557	7.4	640
	40	33	5.5	672	6.3	774
	35	30	4.3	736	4.9	847
	30	26	2.9	622	3.3	714
Free cooling	14	17	2.4	681	2.7	783
Return air:	12	16	2.8	590	3.2	678
18 °C RH 50%	10	14	3.3	719	3.9	827
Heating	6	12	4.2	596	4.7	666
Return air:						
24 °C RH 50%						

CAPACITY TABLE HEATING AND COOLING CAPACITY PER ZONE ELAN 22 DUO 2-ZONE

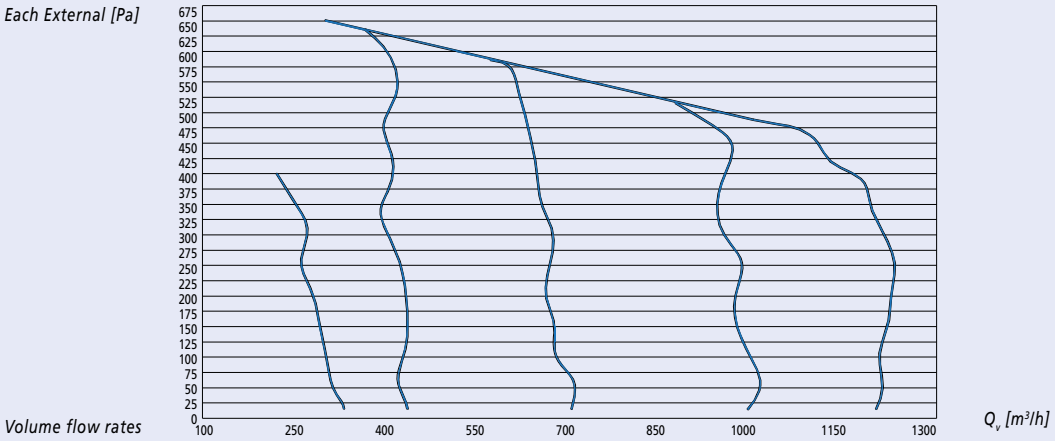
	Water in [°C]	Water out [°C]	Capacity zone 2 at 400 [m³/h] kW	Water-capacity lh	Capacity zone 2 at 600 [m³/h] kW	Water-capacity lh	Capacity zone 2 750 [m³/h] kW	Water-capacity lh
Heating	70	50	6.5	260	8.4	366	10.1	440
Return air:	55	45	4.7	387	6.4	551	7.7	665
18 °C	50	40	4.0	326	5.3	461	6.4	555
RH 50%	50	35	3.9	196	4.7	272	5.6	325
	45	35	3.3	264	4.3	371	5.2	445
	40	33	2.7	315	3.6	445	4.3	535
	35	30	2.1	343	2.8	486	3.4	585
	30	26	1.5	294	1.9	413	2.3	496
Free cooling	14	17	1.2	321	1.6	452	1.9	543
Return air:	12	16	1.4	281	1.8	395	2.2	472
18 °C RH 50%	10	14	1.9	338	2.2	477	2.7	572
Heating	6	12	2.7	426	3.0	426	3.5	496
Return air:								
24 °C RH 50%								

4.2 Indirect-fired appliances

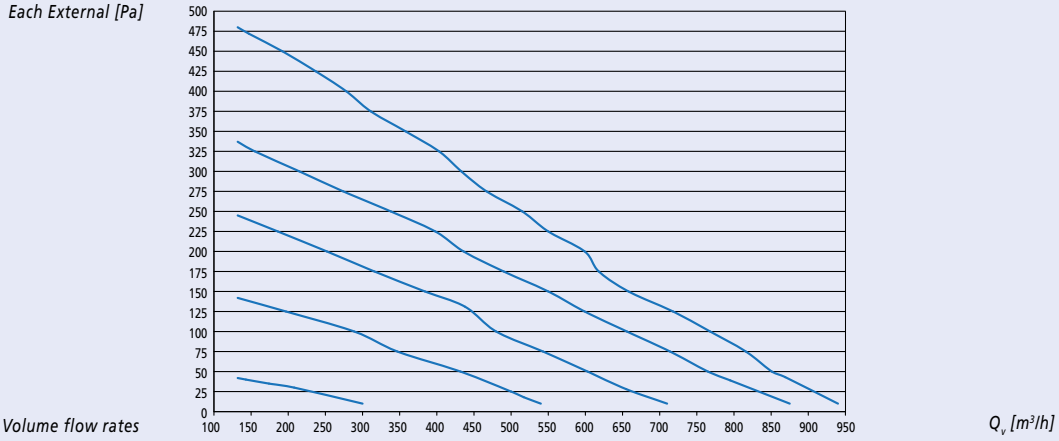
FAN GRAPH ELAN 10 DUO 2-ZONE ELAN 16 DUO 2-ZONE



FAN GRAPHS ELAN 22 DUO 2-ZONE



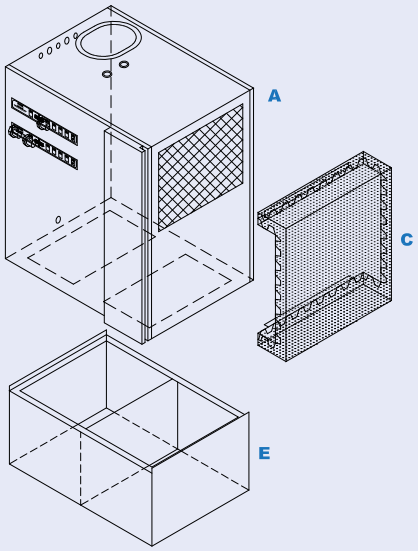
zone 1



zone 2

4.2 Indirect-fired appliances

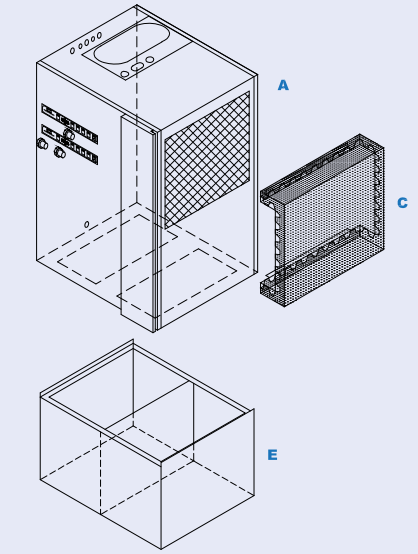
ELAN DUO 10 2-ZONE



Elan 10 Duo Downflow 2-zone with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
E	Output module

ELAN DUO 16 2-ZONE

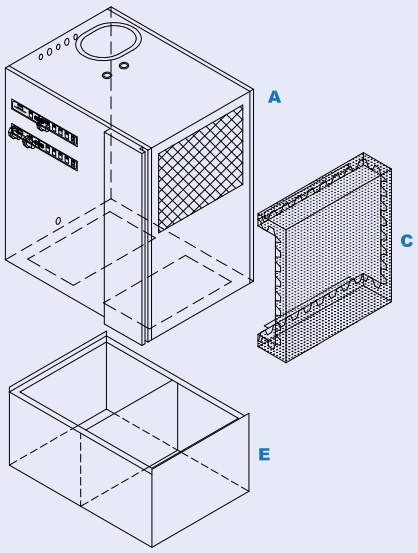


Elan 16 Duo Downflow 2-zone with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
E	Output module

4.2 Indirect-fired appliances

ELAN 22 DUO 2-ZONE



Elan 22 Duo Downflow 2-zone with output module and return at the side

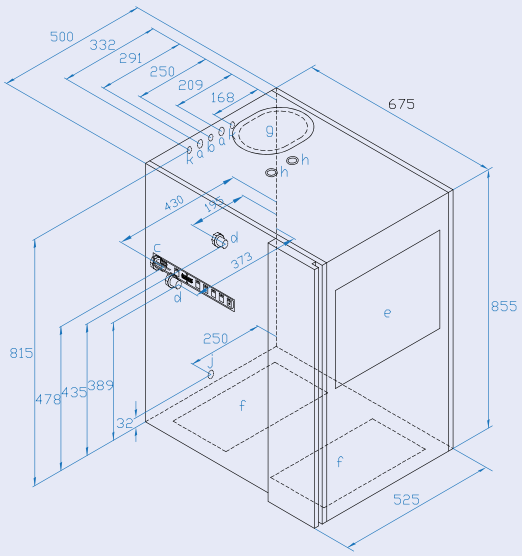
PARTS	
A	Air heater
C	Acoustic return plate
E	Output module

4.2 Indirect-fired appliances

4.2.4 ELAN HEATING/COOLING

GENERAL INFORMATION

ELAN 10 HEATING/COOLING

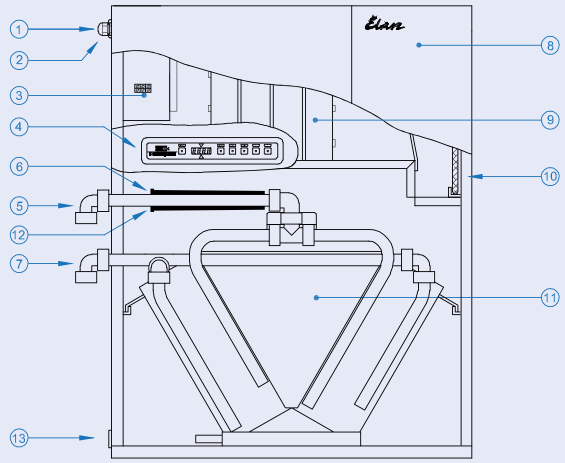


Elan 10 heating/cooling R

SLEEVES

a	Sleeve condensate discharge heat recovery (if applicable)
b	Sleeve power cable 230V
c	Water connection (return) Ø 22
d	Water connection (supply) Ø 22
e	Input opening return air, 399 x 325 mm
f	Exhaust opening, 389 x 202 mm (2x)
g	Connection supply air heat recovery (only if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)
j	Sleeve condensate discharge
k	Sleeve cable option

ELAN 10 HEATING/COOLING



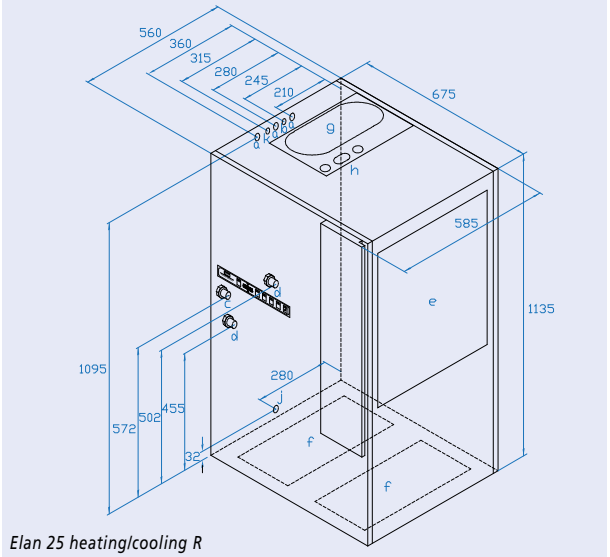
Front view Elan 10 heating/cooling R

PARTS

1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with control unit
4	Control Panel
5	Water connection (return) Ø 22
6	Return temperature sensor
7	Water connection (supply) Ø 22
8	Filter door
9	System fan
10	Filter
11	Heat exchanger
12	System temperature sensor
13	Sleeve condensate discharge

4.2 Indirect fired appliances

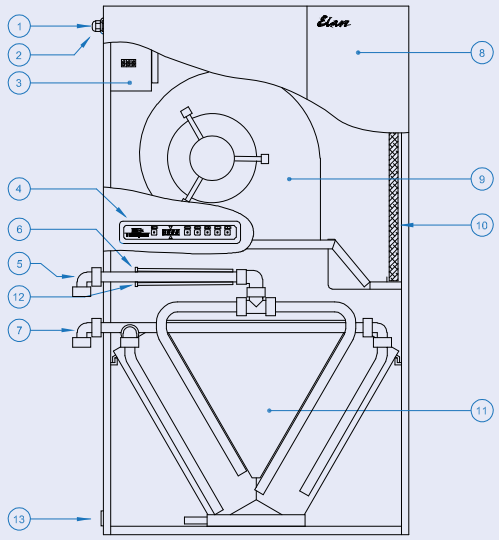
ELAN 25 HEATING/COOLING



Elan 25 heating/cooling R

SLEEVES	
a	Sleeve condensate discharge heat recovery (if applicable)
b	Sleeve power cable 230V
c	Water connection (return) Ø 22
d	Water connection (supply) Ø 22
e	Input opening return air, 470 x 575 mm
f	Exhaust opening, 456 x 214 mm (2x)
g	Connection supply air heat recovery (only if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)
j	Sleeve condensate discharge
k	Sleeve cable option

ELAN 25 HEATING/COOLING



Front view Elan 25 heating/cooling R

PARTS	
1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with control unit
4	Control Panel
5	Water connection (return) Ø 22
6	Return temperature sensor
7	Water connection (supply) Ø 22
8	Filter door
9	System fan
10	Filter
11	Heat exchanger
12	System temperature sensor
13	Sleeve condensate discharge

4.2 Indirect-fired appliances

GENERAL INFORMATION

TECHNICAL SPECIFICATIONS ELAN HEATING/COOLING

Appliance type	Elan 10 heating/cooling		Elan 25 heating/cooling	
	Nominal	Maximum	Nominal	Maximum
Air flow rate [m³/h]	650	800	1800	2200
Heating capacity [kW]	9.6	11.4	23.4	27.2
Water capacity [l/h]	418	496	1018	1188
Waterside resistance [kPa]	0.6	0.8	0.66	0.9
Rated power fan [W]	80	150	315	460
Water temperature range [°C]	70/50		70/50	
Air supply temperature [°C]	18		18	
Supply voltage [V~/Hz]	230/50		230/50	
Maximum operating pressure exchanger [bar]	6		6	
Water capacity exchanger [l]	3.5		6	
Protection degree	IP20		IP20	
Water connection socket joint [mm]	22		22	
Weight [kg]	40		65	

CAPACITIES TABLE HEATING AND COOLING CAPACITY ELAN 10 HEATING/COOLING

	Water in [°C]	Water out [°C]	Air flow rate 500 [m³/h]		Air flow rate 650 [m³/h]		Air flow rate 800 [m³/h]		Power levels at different return air temperatures [°C]			
			[kW]	[l/h]*	[kW]	[l/h]*	[kW]	[l/h]*	16	20	22	28
Heating	70	50	7.6	332	9.6	418	11.4	496	+5%	-5%	-10%	
Return air:	55	45	5.7	492	7.1	620	8.5	742	+5%	-5%	-10%	
18 °C	50	35	4.4	254	5.5	316	6.5	374	+5%	-5%	-10%	
RH** 50%	50	40	4.8	416	6.0	522	7.2	624	+5%	-5%	-10%	
	45	35	3.9	338	4.9	424	5.8	504	+5%	-5%	-10%	
	40	33	3.3	402	4.1	506	4.9	604	+5%	-5%	-10%	
	35	30	2.5	438	3.2	552	3.8	658	+5%	-5%	-10%	
	30	26	1.7	376	2.2	472	2.6	526	+5%	-5%	-10%	
Free cooling	14	17	1.4	416	1.8	518	2.1	616				+30%
Return air:	12	16	1.7	362	2.1	454	2.5	540				+20%
24°C RH** 50%	10	14	1.9	418	2.4	506	3.0	650				+15%
Cooling	6	12	2.3	430	2.9	524	3.4	610				+20%
Return air:												
24°C RH** 50%												

** Water capacity*

*** RH = Relative Humidity*

4.2 Indirect-fired appliances

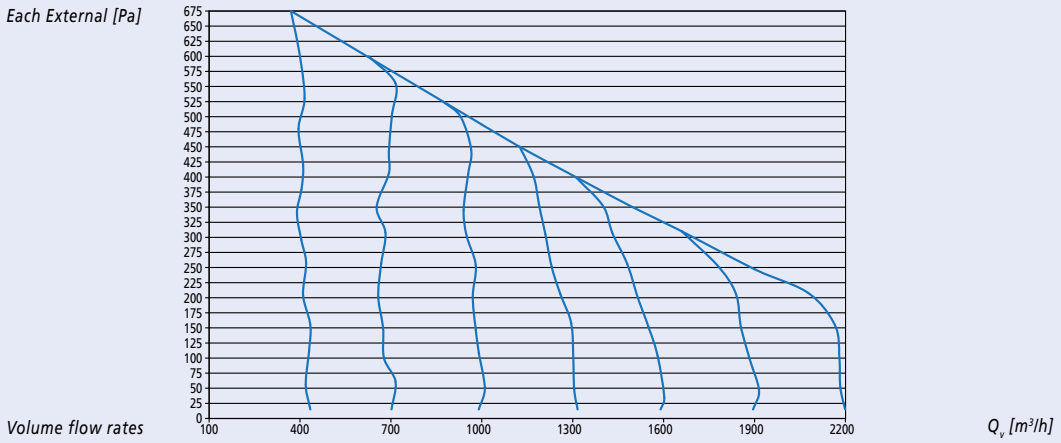
CAPACITIES TABLE HEATING AND COOLING CAPACITY ELAN 25 HEATING/COOLING

	Water in [°C]	Water out [°C]	Air flow rate 1200 [m³/h]		Air flow rate 1800 [m³/h]		Air flow rate 2200 [m³/h]		Power levels at different return air temperatures [°C]			
			[kW]	[l/h]*	[kW]	[l/h]*	[kW]	[l/h]*	16	20	22	28
Heating	70	50	16.4	732	23.4	1018	27.2	1188	+5%	-5%	-10%	
Return air:	55	40	11.6	670	16.0	925	18.7	1080	+5%	-5%	-10%	
18 °C	50	38	10.2	736	14.1	1020	16.5	1190	+5%	-5%	-10%	
RH** 50%	50	35	9.4	544	12.9	746	15.0	866	+5%	-5%	-10%	
	45	35	8.6	742	11.9	1028	13.9	1198	+5%	-5%	-10%	
	40	33	7.2	990	10.0	1238	11.7	1444	+5%	-5%	-10%	
	35	30	5.6	972	7.9	1354	9.2	1586	+5%	-5%	-10%	
	30	26	3.8	825	5.3	1146	6.2	1338	+5%	-5%	-10%	
Free cooling	14	17	3.2	904	4.4	1256	5.1	1466				+35%
Return air:	12	16	3.7	790	5.1	1090	6.4	1270				+30%
24°C RH** 50%	10	14	4.4	954	6.1	1324	7.2	1548				+20%
Cooling	6	12	5.0	852	6.9	1116	8.0	1254				+20%
Return air:												
24°C RH** 50%												

** Water capacity*

*** RH = Relative Humidity*

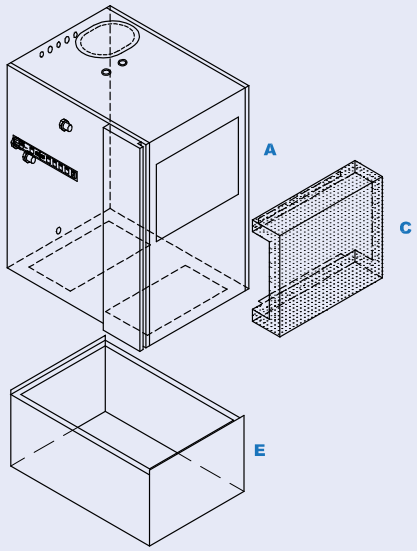
FAN GRAPH ELAN 25 HEATING/COOLING



4.2 Indirect-fired appliances

TECHNICAL INFORMATION

ELAN 10 HEATING/COOLING

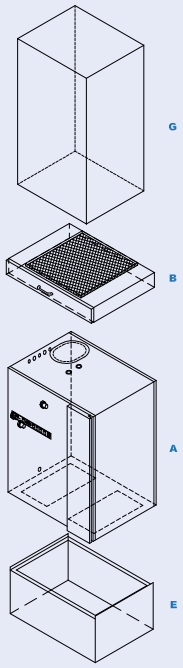


Elan 10 heating/cooling Downflow with output module and return at the side

PARTS

A	Air heater
C	Acoustic return plate
E	Output module

ELAN 10 HEATING/COOLING



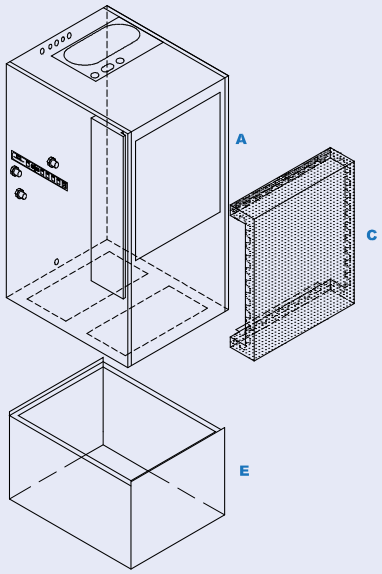
Elan 10 heating/cooling Downflow with output module, filter unit and return air unit on top

PARTS

A	Air heater
B	Filter unit
E	Output module
G	Return air unit

4.2 Indirect-fired appliances

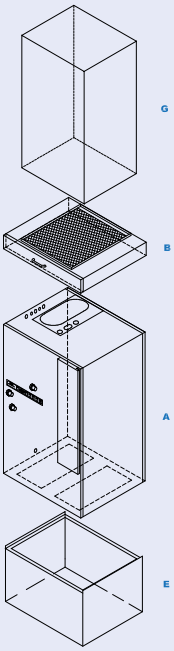
ELAN 25 HEATING/COOLING



Elan 25 heating/cooling Downflow with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
E	Output module

ELAN 25 HEATING/COOLING



Elan 25 heating/cooling Downflow with output module, filter unit and return air unit on top

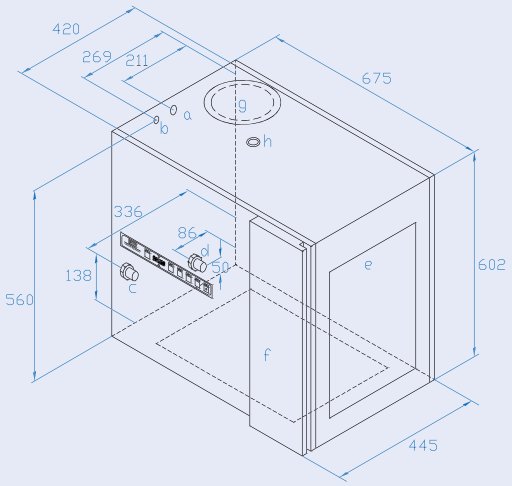
PARTS	
A	Air heater
B	Filter unit
E	Output module
G	Return air unit

4.2 Indirect-fired appliances

4.2.5 ELAN

TECHNICAL INFORMATION

ELAN 10

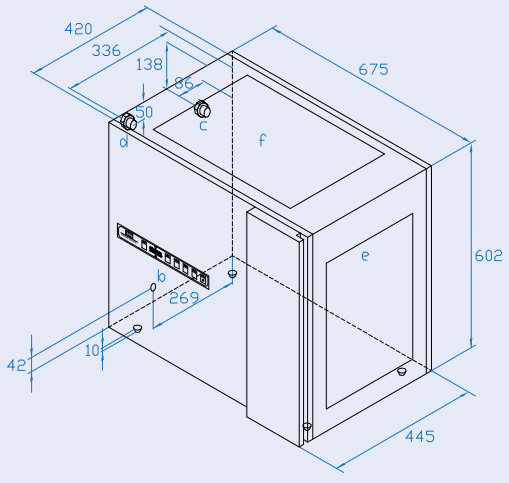


Elan 10 Downflow R

SLEEVES

a	Sleeve condensate discharge heat recovery (if applicable)
b	Sleeve power cable 230V
c	Water connection (return), ¾" female
d	Water connection (supply), ¾" female
e	Input opening return air, 319 x 497 mm
f	Exhaust opening, 320 x 465 mm
g	Connection input air heat recovery (if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)

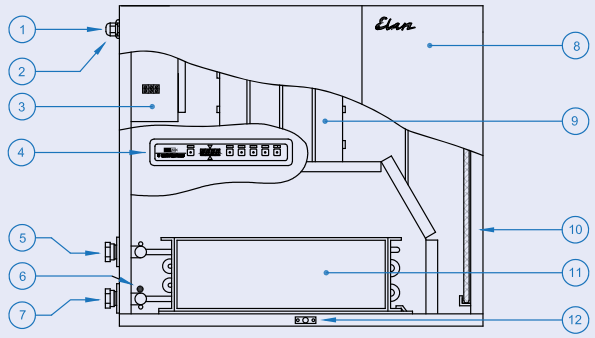
ELAN 10



Elan 10 Upflow R

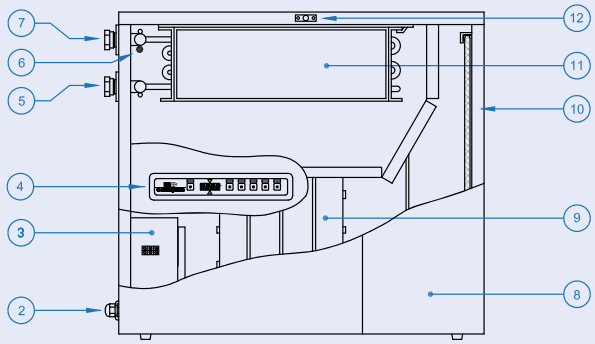
4.2 Indirect-fired appliances

ELAN 10



Front view Elan 10 Downflow R cross-section

ELAN 10



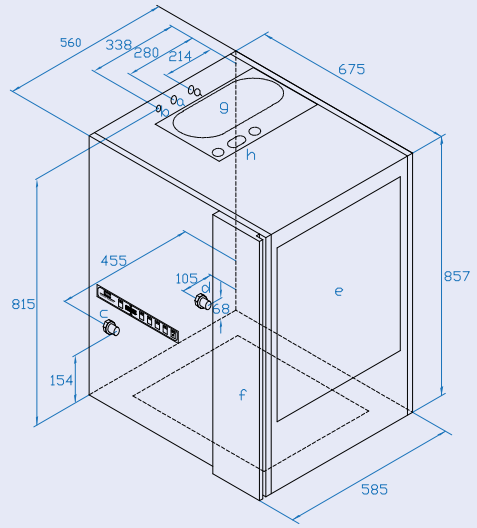
Front view Elan 10 Upflow R cross-section

PARTS

1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with control unit
4	Control Panel
5	Water connection (return), ¾" female
6	Return temperature sensor
7	Water connection (supply), ¾" female
8	Filter door
9	System fan
10	Filter
11	Heat exchanger
12	System temperature sensor

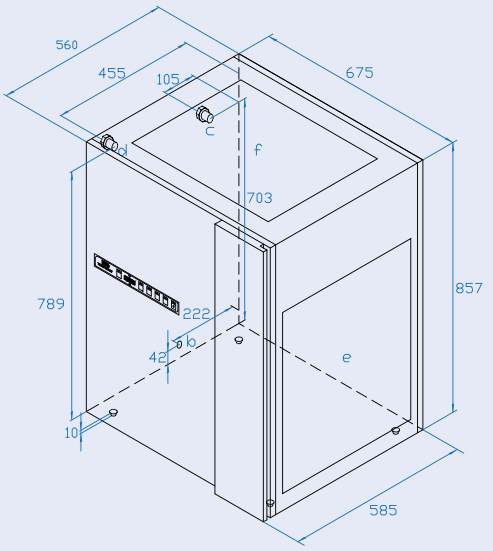
4.2 Indirect-fired appliances

ELAN 25



Elan 25 Downflow R

ELAN 25



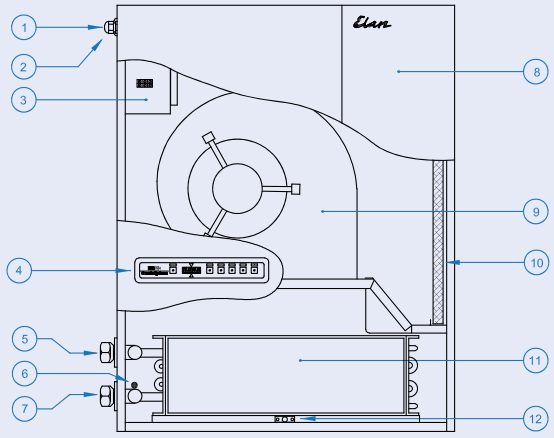
Elan 25 Upflow R

SLEEVES

a	Sleeve condensate discharge heat recovery (if applicable)
b	Sleeve power cable 230V
c	Water connection (return), 1" female
d	Water connection (supply), 1" female
e	Input opening return air, 470 x 575 mm
f	Exhaust opening, 440 x 550 mm
g	Connection input air heat recovery (if applicable)
h	Sleeve condensate discharge heat recovery (if applicable)

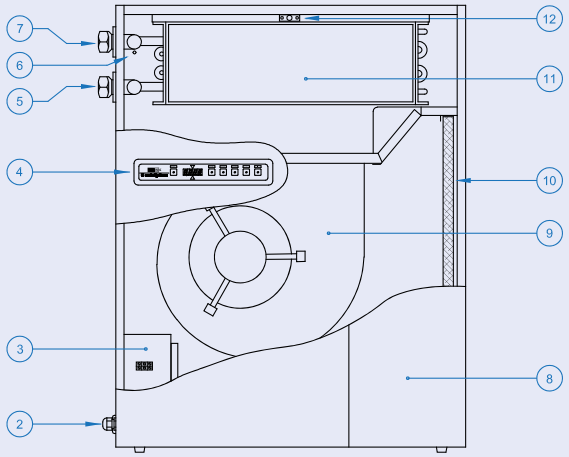
4.2 Indirect-fired appliances

ELAN 25



Front view Elan 25 Downflow R cross-section

ELAN 25



Front view Elan 25 Upflow R cross-section

PARTS

1	Sleeve condensate discharge heat recovery (if applicable)
2	Sleeve power cable 230V
3	Switchbox with control unit
4	Control Panel
5	Water connection (return), 1" female
6	Return temperature sensor
7	Water connection (supply), 1" female
8	Filter door
9	System fan
10	Filter
11	Heat exchanger
12	System temperature sensor

4.2 Indirect-fired appliances

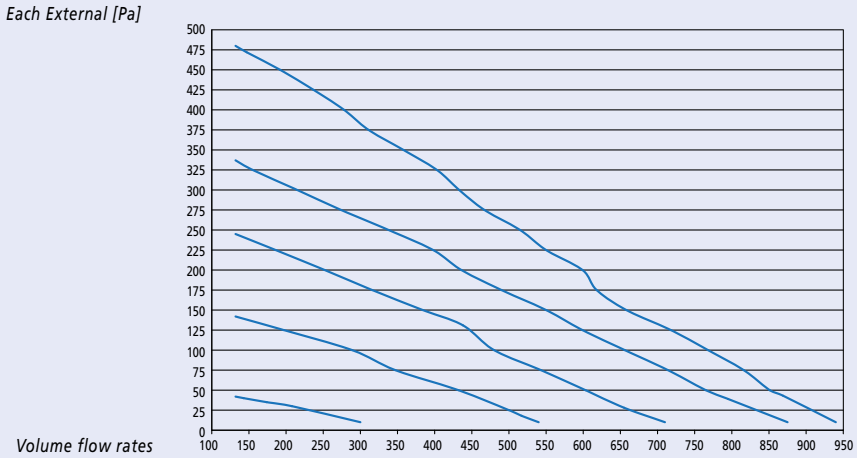
TECHNICAL SPECIFICATIONS ELAN				
Appliance type	Elan 10		Elan 25	
	Nominal	Maximum	Nominal	Maximum
Air flow rate [m³/h]	650	800	1800	2200
Heating capacity [kW]	8.7	10.2	21.9	25.4
Water capacity [l/h]	378	445	956	1108
Waterside resistance [kPa]	1.7	2.3	2.24	2.94
Rated power fan [W]	80	150	315	460
Water temperature range [°C]	70/50	70/50	70/50	70/50
Air supply temperature [°C]	18	18	18	18
Supply voltage [V~/Hz]	230/50		230/50	
Maximum operating pressure exchanger [bar]	16		16	
Water capacity exchanger [l]	2		3.26	
Protection degree	IP30		IP30	
Water connection (female thread) ["]	¾		1	
Weight [kg]	32		62	

CORRECTION FACTOR HEATING CAPACITY ELAN 10 AT OTHER WATER AND AIR INPUT TEMPERATURES								
Water temperature range [°C]	Air supply temperature [°C]							
	Nominal				Maximum			
	+16	+18	+20	+22	+16	+18	+20	+22
90/70	1.54	1.49	1.44	1.38	1.56	1.50	1.45	1.39
90/50	1.29	1.23	1.17	1.11	1.27	1.22	1.17	1.11
70/50	1.05	1.00	0.94	0.90	1.05	1.00	0.95	0.89
50/35	0.61	0.56	0.51	0.46	0.62	0.56	0.51	0.46

CORRECTION FACTOR HEATING CAPACITY ELAN 25 AT OTHER WATER AND AIR INPUT TEMPERATURES								
Water temperature range [°C]	Air supply temperature [°C]							
	Nominal				Maximum			
	+16	+18	+20	+22	+16	+18	+20	+22
90/70	1.58	1.53	1.47	1.42	1.59	1.54	1.48	1.42
90/50	1.26	1.20	1.14	1.08	1.25	1.19	1.13	1.07
70/50	1.05	1.00	0.95	0.89	1.06	1.00	0.94	0.89
50/35	0.61	0.55	0.50	0.44	0.60	0.55	0.49	0.44

4.2 Indirect-fired appliances

FAN GRAPH ELAN 10



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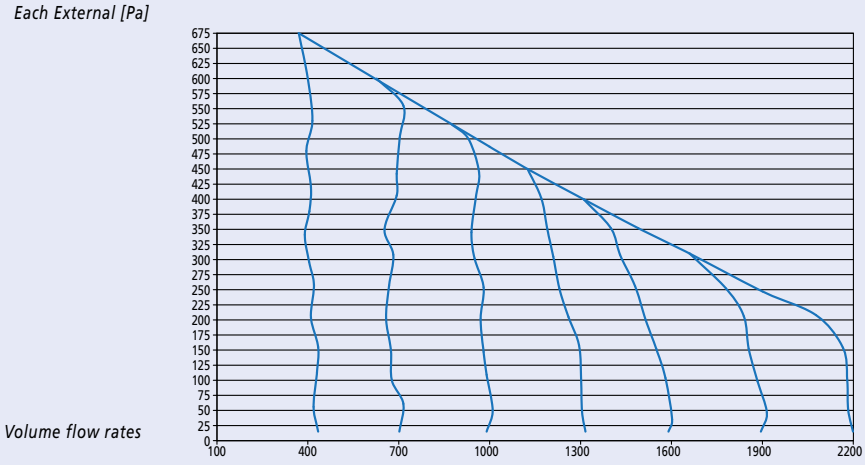
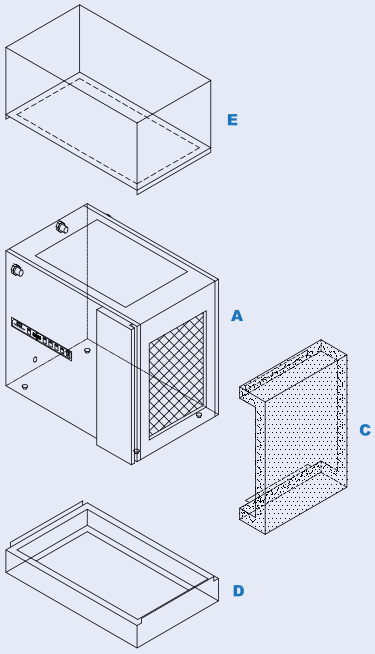


4.2 Indirect-fired appliances

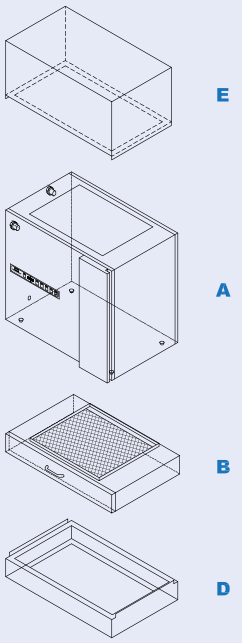
ELAN 10



Elan 10 Upflow with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
D	Replacement base
E	Output module

ELAN 10

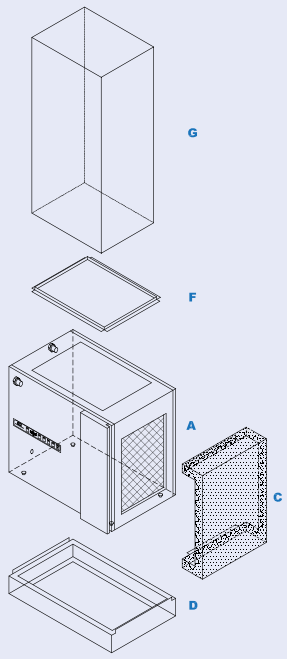


Elan 10 Upflow with output module and return with filter unit at the bottom

PARTS	
A	Air heater
B	Filter unit
D	Replacement base
E	Output module

4.2 Indirect-fired appliances

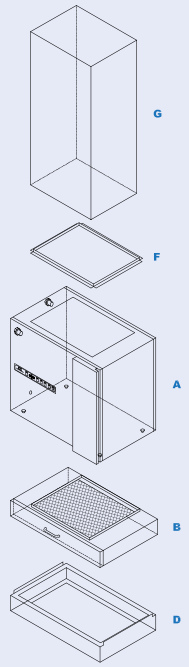
ELAN 10



Elan 10 Upflow with hot air unit and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
D	Replacement base
F	Connection frame for hot air unit
G	Hot air unit

ELAN 10

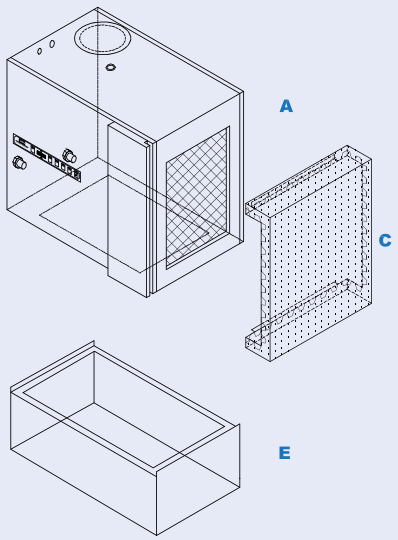


Elan 10 Upflow with hot air unit and return with filter unit at the bottom

PARTS	
A	Air heater
B	Filter unit
D	Replacement base
F	Connection frame for hot air unit
G	Hot air unit

4.2 Indirect-fired appliances

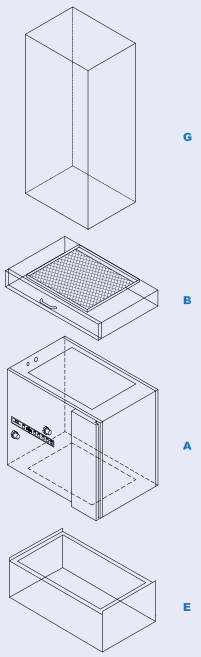
ELAN 10



Elan 10 Downflow with output module and return at the side

PARTS	
A	Hot air unit
C	Acoustic return plate
E	Output module

ELAN 10

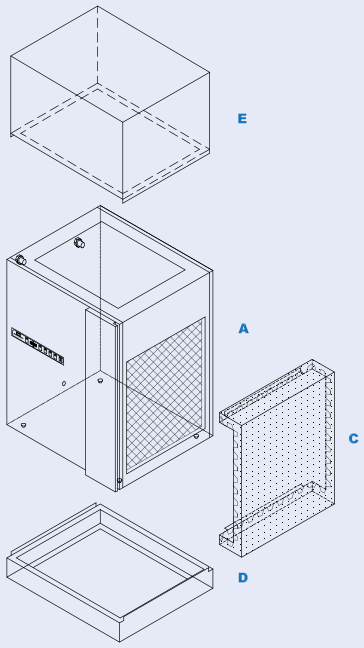


Elan 10 Downflow with output module and filter unit with return air unit at the top

PARTS	
A	Air heater
B	Filter unit
E	Output module
G	Return air unit

4.2 Indirect-fired appliances

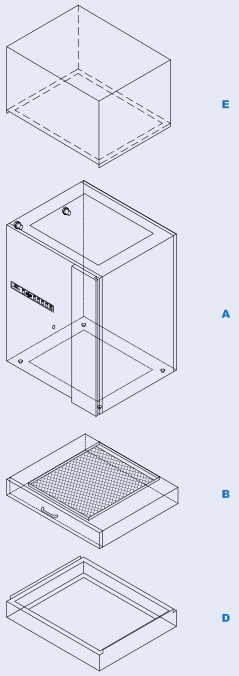
ELAN 25



Elan 25 Upflow with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
D	Replacement base
E	Output module

ELAN 25

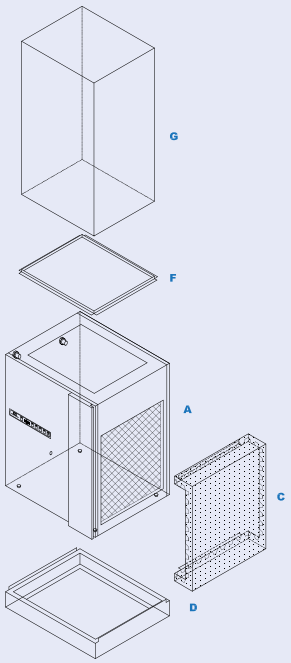


Elan 25 Upflow with output module and return with filter unit at the bottom

PARTS	
A	Air heater
B	Filter unit
D	Replacement base
E	Output module

4.2 Indirect-fired appliances

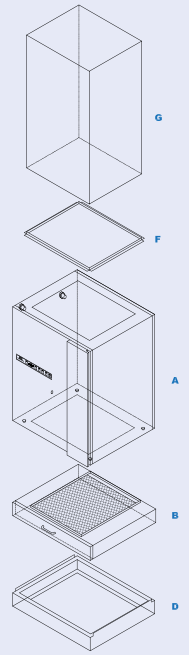
ELAN 25



Elan 25 Upflow with hot air unit and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
D	Replacement base
F	Connection frame for hot air unit
G	Hot air unit

ELAN 25

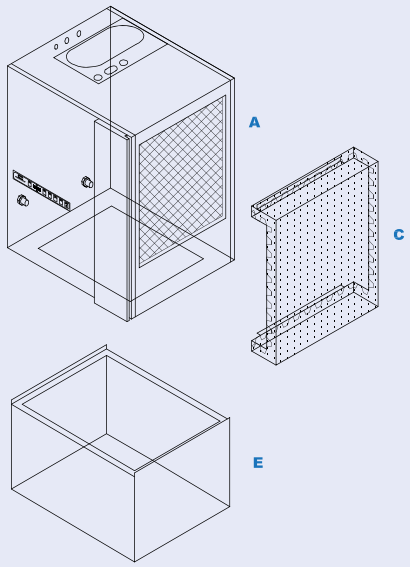


Elan 25 Upflow with hot air unit and return with filter unit at the bottom

PARTS	
A	Air heater
B	Filter unit
D	Replacement base
F	Connection frame for hot air unit
G	Hot air unit

4.2 Indirect-fired appliances

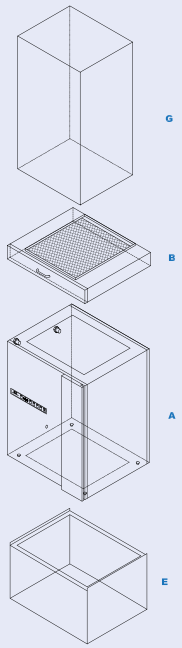
ELAN 25



Elan 25 Downflow with output module and return at the side

PARTS	
A	Air heater
C	Acoustic return plate
E	Output module

ELAN 25



Elan 25 Downflow with output module and filter unit with return air unit at the top

PARTS	
A	Air heater
B	Filter unit
E	Output module
G	Return air unit

4.3 Direct-fired appliances

4.3.1 ALLURE

GENERAL INFORMATION

THE ALLURE APPLIANCE

Allure is a gas-fired, high-efficiency air heater. This means the appliance's gas consumption is lower than that of comparable appliances and the emission of harmful substances remains limited to the minimum. The rated electric power has strongly been reduced through application of advanced electronic control systems and the use of direct current fans. These fans are highly energy-efficient under all operational conditions. Allure's sheet steel body is epoxy-coated in a cream colour (RAL 1013).

VERSIONS

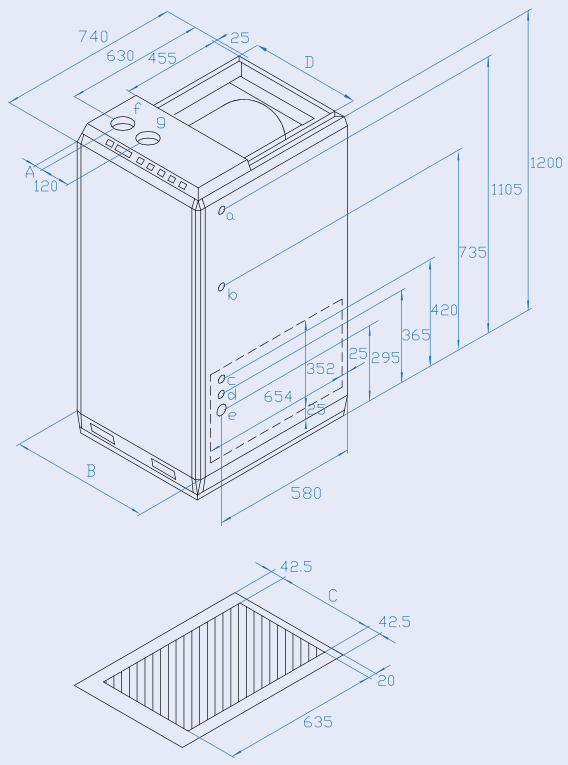
Appliances from the Allure series come in two versions. Allure Upflow blows out at the top. Allure Downflow blows out at the bottom. In addition, the air heater can be extended with top cooling (see chapter 'Top Cooling'), an atmospheric temperature sensor and an electronic filter.

If the Allure gets more than 50% of its air directly from the open air, an outdoor air appliance must be chosen. The air trap is placed outside the appliance. In that case the outdoor air duct is connected to the return duct. This outdoor air duct may be fitted with a diverter valve. In this version the appliance can take 0 to 100% of its air from outdoors, dependent on the diverter valve position. In addition to room temperature, the ventilation air is also kept at a preset minimum temperature. Another option is an automatic link with the extraction system.

NEW ALLURE AVAILABLE SECOND QUARTER 2010

The current Allure appliances are discontinued. The new Allure is available as from 1 July 2010. More information can be found in Chapter1 New products and concepts.

ALLURE



Allure Upflow

SLEEVES

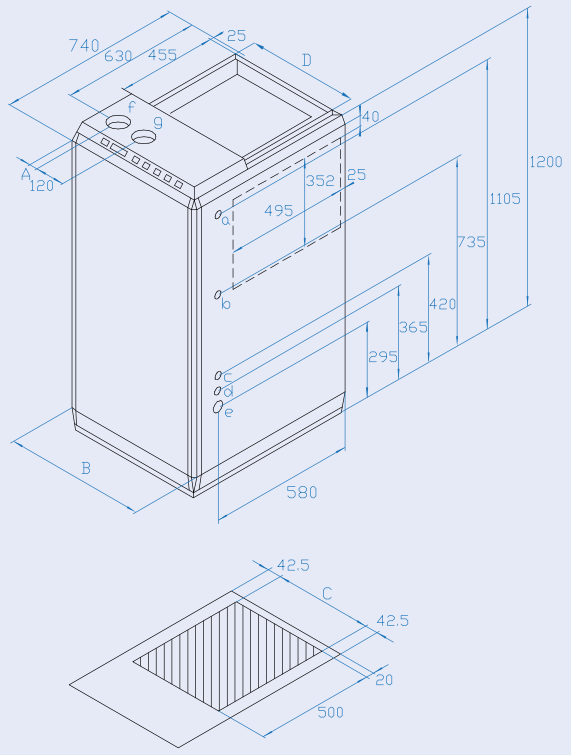
a	Air temperature sensor (T_3)
b	Gas connection
c	Electric power cable 230 V
d	Thermostat cable
e	Condensate discharge
f	Flue gas discharge
g	Combustion air supply

DIMENSIONS (IN MM)

Type	A	B	C	D
B-16 HR	110	400	315	345
B-25 HR	125	500	415	445
B-40 HR	175	600	515	545

4.3 Direct-fired appliances

ALLURE



Allure Downflow

SLEEVES

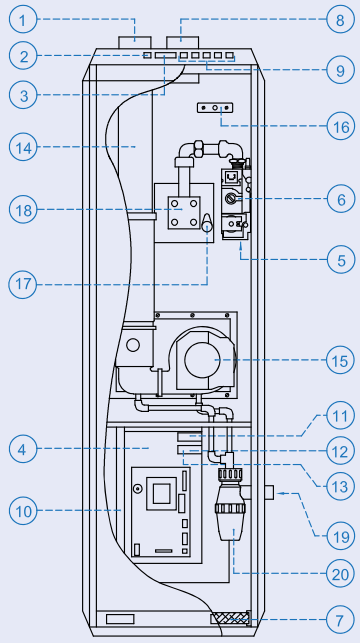
a	Thermostat cable
b	Electric power cable 230 V
c	Gas connection
d	Air temperature sensor (T_3)
e	Condensate discharge
f	Flue gas discharge
g	Combustion air supply

DIMENSIONS (IN MM)

Type	A	B	C	D
B-16 HR	110	400	315	345
B-25 HR	125	500	415	445
B-40 HR	175	600	515	545

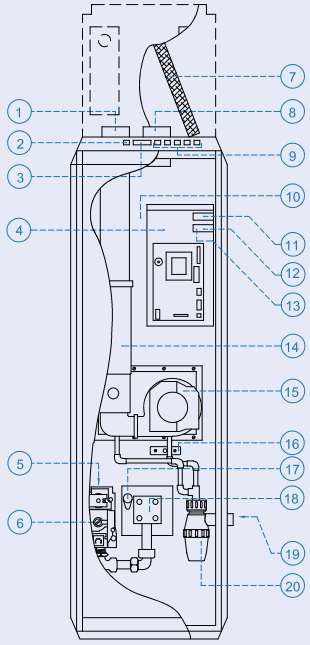
4.3 Direct-fired appliances

ALLURE



Front view Allure Upflow

ALLURE



Front view Allure Downflow

SLEEVES

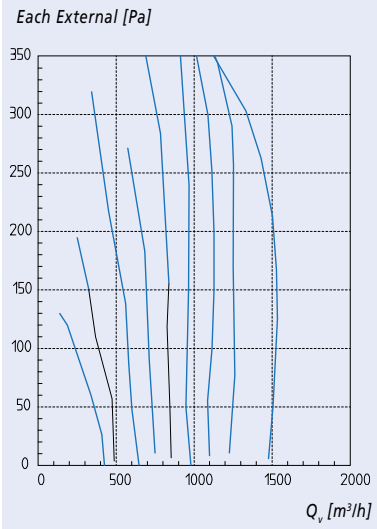
1	Flue gas discharge
2	Reset button
3	Display
4	Switchbox with control unit
5	Gas connection ½" (female)
6	Safety shut-off
7	Filter
8	Combustion air supply
9	Control Panel
10	System fan (for Downflow behind panel)
11	Connection room thermostat
12	Connection temperature sensor (T_3)
13	Connection mains power 230 V (not fitted with power cord and plug)
14	Sliding pipe
15	Flue gas fan
16	Maximum safety
17	Igniter pin
18	Burner
19	Connection condensate discharge
20	Air trap

4.3 Direct-fired appliances

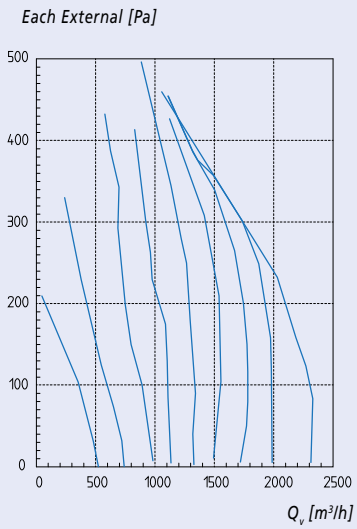
TECHNICAL SPECIFICATIONS ALLURE

	B-16 HR(D)	B-25 HR(D)	B-40 HR(D)
Adjustable net capacity [kW]	4 - 16	6 - 25	9.5 - 39.5
Nominal load upper limit [kW]	4.08 - 17.20	6.10 - 26.80	9.65 - 42.40
Nominal electric rated power [kW]	0.19	0.26	0.60
Adjustable air quantity [m³/h]	300 - 1350	450 - 2100	750 - 3400
Fan control setting [°C]	Fan on: when flame Fan off: between 20 - 30	Fan on: when flame Fan off: between 20 - 30	Fan on: when flame Fan off: between 20 - 30
Maximum safety [°C]	100	100	100
Width [mm]	400	500	600
Height [mm]	1200	1200	1200
Depth [mm]	740	740	740
Weight [kg]	74	83	92
Supply voltage [V~/Hz]	230/50	230/50	230/50
Protection degree	IP30	IP30	IP30
Injector diameter [mm]	6 x Ø 2.8 2.8	6 x Ø 3.8 3.8	6 x Ø 4.8 4.8
Gas connection (female) ["]	½	½	½
Flue gas connection [mm]	Ø 80	Ø 80	Ø 80
Combustion air connection [mm]	Ø 80	Ø 80	Ø 80

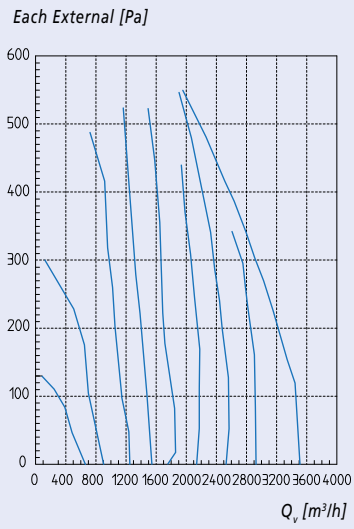
FAN GRAPHS ALLURE



B-16 HR(D)



B-25 HR(D)



B-40 HR(D)

CONTROL SYSTEM

Allure modulates the produced output between 25 and 100%. A modulating room thermostat measures the difference between the set temperature and the actual temperature. The control unit processes the signal from the room thermostat and determines the setting of the continuously controlled burner.

The air quantity is adapted to the appliance exhaust temperature. All this results in a very stable room temperature, realising a perfect interior climate. The room thermostat must be ordered separately. Allure features an adjustment display on which all settings can be made.

4.3 Direct-fired appliances

TECHNICAL INFORMATION

INSTALLATION ALLURE

All control equipment has been mounted and checked in the factory. As the appliance itself determines what power is required for heating, the installer does not have to set this. Only the air quantity must be adjusted, if necessary.

The appliance is set for a standard program. The installer can modify this program. A 3-way switch on the Brink room thermostat allows the user to choose between three operating modes of the appliance: 1. the system fan modulating on during heat demand, 2. the system fan always modulating on even without heat demand, and 3. the system fan continuously at highest setting for summer ventilation.

The appliance should preferably be placed as centrally as possible relative to the air ducts and as closely as possible to the flue gas discharge and the combustion air supply ducts.

It is important that the air heater is in a frost-free room. If the floor is humid, the air heater must be placed above floor level. In addition, it is important to install the appliance level and free from the wall and the ceiling, taking into account sufficient room for maintenance. This means at least 1 m free room at the front of the appliance with 1.80 m headroom. There must be a free space of at least 50 mm between the flue gas discharge duct and any combustible material.

The air heater can be used in a free return system. This means that the installation room has an open connection with the rest of the dwelling. (Condition is, that the combustion air supply is connected.) Be sure to pay attention to the noise level.

HOT AIR CONNECTION

For the Allure Upflow, the hot air unit is placed on top of the appliance and for the Allure Downflow it is placed under the appliance. The hot air unit is fixed to the appliance using S-strips. Subsequently, the hot air ducts are connected to the hot air unit. For the Allure Downflow there are various connection options.

A: Appliance on the floor and ducts under the floor. Use an internally insulated hot air platform of at least 300 mm high, to which the hot air is connected at the bottom using a connecting frame (internally insulated). It connects the platform to the hot air duct. Advantage of this layout compared to B and C is that the transition resistance is lower, so the appliance's noise level is lower. In addition, the T_3 sensor can conveniently be mounted in the platform.

B: The duct system can be connected through the hot air unit using a mounting plate. The appliance can be placed on the mounting plate. For a tight seal between the appliance and the plate, we recommended to use a strip of glass wool and to place the appliance on a 100 mm replacement base so the T sensor can be connected directly at the appliance.

C: Use an internally insulated hot air platform to which hot air ducts can be connected on all sides using connecting frames.

CONNECTING DUCTS

Each branch of the hot air unit or the main duct must be provided with a control diffuser. In addition, all hot air ducts (including the grille shoes and the outdoor air duct) must be insulated. To prevent moisture absorption from the ambient air, the insulation material must be provided with a moisture barrier. Be sure to lay out the return ducts in such a manner that they do not become sound bridges. That means a straight connection between two rooms is not permitted. The appliance is connected to a specially designed icicle-resistant roof sleeve that has been tested with the appliance. The combustion air channel must be connected to the roof sleeve, but a separate wall connection is another option.

If the flue gas discharge runs through the wall, the specially designed and approved combined wall sleeve must be mounted as well.

CONNECTION OPTIONS RETURN AIR

Allure Upflow comes with a flat filter at the bottom. A return air connection can be made in three different ways.

A: Connecting the return duct mounted under the floor at the underside of the appliance using a special developed connection frame.

B: Using the filter unit side connection on the left or on the right of the appliance (B-16 HR and B-25 HR). It may be necessary to move the condensate discharged to the other side of the appliance. For a B-40 HR, one filter unit side connection is not sufficient. An additional filter unit must be placed on the other side.

C: Using the return air platform. The return duct is connected to this platform. The return air is filtered by the filter at the bottom of the appliance. If sufficient height is available, this layout for B-40 HR is preferred to the use of two filter units.

4.3 Direct-fired appliances

The Allure Downflow appliances are not equipped with a filter. A design-specific external filter is installed afterwards. Three options have been developed for the return air connection.

A: A side connection by placing the filter unit on the left or on the right of the appliance. The front 120 mm of the filter is covered by the appliance structure. Then the top of the appliance must be provided with an insulated cover. The filter can be removed at the front.

B: The filter return air unit on top of the appliance. It contains two filters placed at an angle. The filters can be removed at the front. The return air unit can be placed at the top.

C: The filter unit for fully open return. In that case a duct connection is not possible. The unit's inside is finished with convoluted acoustic foam and the filter can be taken out at the side. This solution is only suitable for B-16 HRD and B-25 HRD.

Before the outdoor air duct is connected to the return duct, it must be provided with an adjustment diffuser.

REPLACEMENT

If the Allure Upflow is being installed as a replacement appliance, special attention must be paid to an optimum connection to the return duct. It is necessary that the entire filter area is effectively utilised. Therefore, we recommend to place a replacement base as adapter.

SOUND INSULATION PROVISIONS

Improved insulation of buildings also shuts out sound from the surroundings. This has increased the importance of installation sound elimination. That is why for reasons of optimisation the appliance's fan unit comes as standard with internal acoustic insulation (12 mm). The layout deserves extra attention to prevent complaints. For that purpose we supply an internally acoustically insulated hot air unit as standard.

To limit the sound level in the hot air duct, an acoustic louver has been developed that can be mounted lengthwise in the main duct (see chapter ´Duct systems´, section Price details). Over a length of 2 m directly downstream of the air heater, in combination with the insulated hot air unit, that results in a reduction of about 10 dB(A). That applies to the appliance's hot air and return sides. Round pipe branches close to the air heater must be provided with 1 m of acoustic duct where necessary.

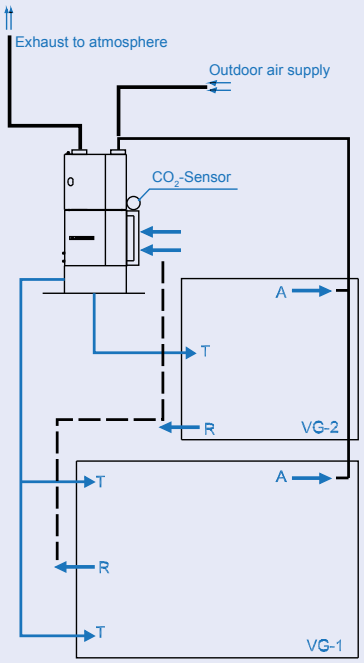
(EXTRA) AIR FILTERING

The standard filters for the Allure appliances (class G3) are flat filters. For the Allure Upflow, an electronic filter (fine dust filter) can be placed in the same filter slide. This filter also fits in the filter unit side connection. This fine dust a filter is suitable for people with asthmatic problems. In addition, an extended use bag filter has been developed for industrial applications (see later in this chapter).

EASE OF VENTILATION, ENERGY ECONOMY AND EPS GAIN

If an air heater is installed in combination with a Renovent HR, adding a CO_2-sensor in the return air flow enables demand-controlled ventilation. Moreover, this feature creates additional EPS gains of about 0.06. For that purpose Renovent HR must be equipped with an option pcb.

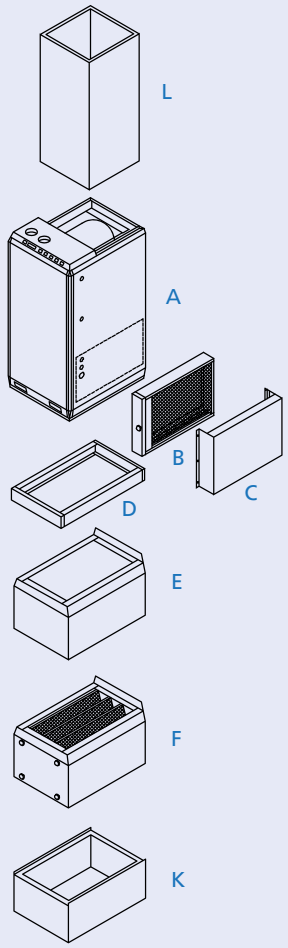
DEMAND CONTROL



Principle demand control

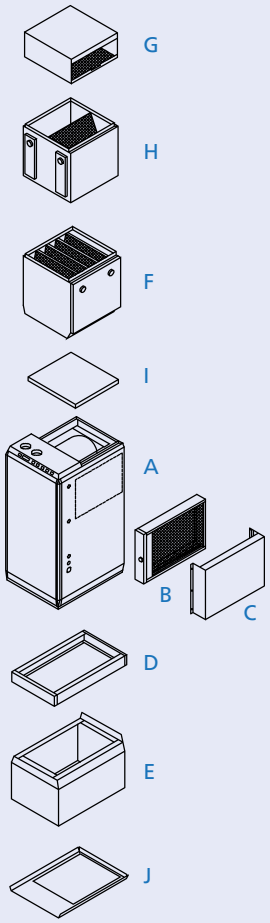
4.3 Direct-fired appliances

ALLURE



Allure Upflow and accessories.

ALLURE



Allure Downflow and accessories.

PARTS

A	Air heater	G	Filter unit open return
B	Filter unit side connection	H	Filter return air unit, with internal acoustic insulation
C	Acoustic return plate for filter unit	I	Cover, with internal insulation
D	Replacement base	J	Base plate
E	Platform, with internal acoustic insulation	K	Return platform extended use bag filter
F	Unit fitted with extended use bag filters	L	Hot air unit, with internal acoustic insulation

4.3 Direct-fired appliances

DESIGN SOLUTION INDUSTRIAL APPLICATIONS

The Allure air heater and the air nozzle have been combined to develop a high-efficiency solution for heating large assembly spaces, shops, showrooms, workshops and warehouses. The relatively simple installation options offer ample industrial application options for heating well-insulated industrial and business buildings. The heating and ventilation systems are combined with:

A: a free-blowing (standing or hanging) air heater with an integrated standard nozzle head, or

B: round ducts with nozzles divided in clusters or evenly spread out over the duct.

FEATURES

The design solution for industrial applications leads to high efficiency under all conditions. In combination with adequate vertical and horizontal temperature distribution, huge energy savings can be achieved. The systems are simple to install. In addition, the nozzle is high-inducing, has a considerable length of throw and an adjustable outflow direction. In short: this design solution supplies optimum comfort.

CONTROL SYSTEM

The air quantity is adapted to the appliance exhaust temperature and can continuously be adjusted on the display. Together with a careful duct design, all this results in an even room temperature.

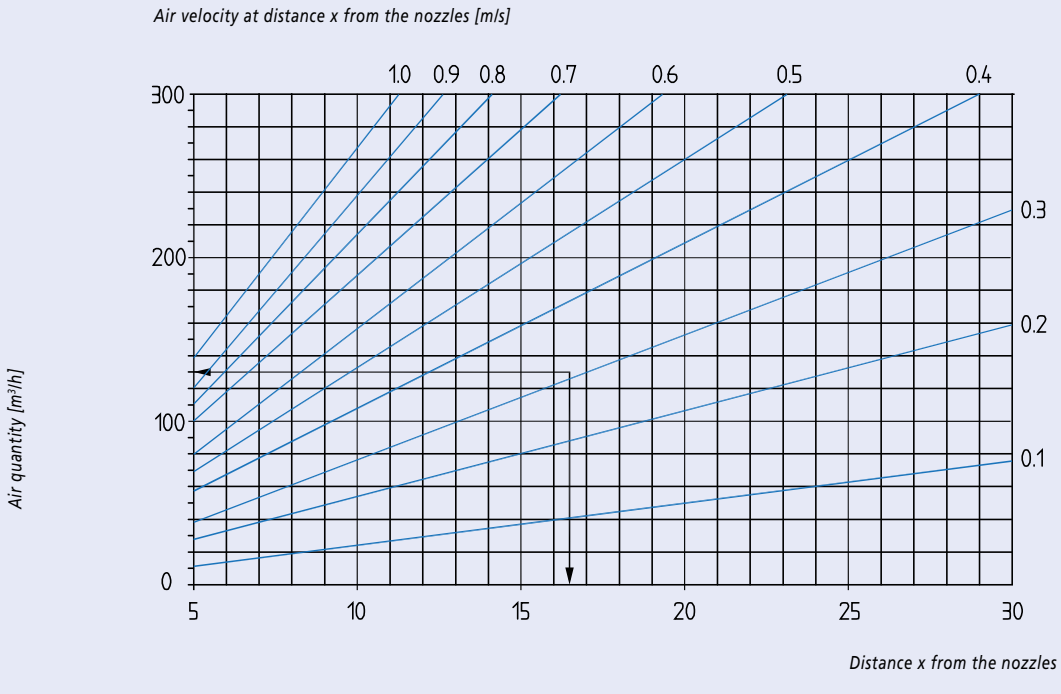
EXTENDED USE BAG FILTER

For industrial applications, dependent on the dust production, it may be advisable to install an extended use bag filter. On the basis of filter class G4, a series of platforms and connections has been developed for the Allure appliances (see section Price details). The large filter area considerably increases the use period.

EXAMPLE CALCULATION NOZZLE

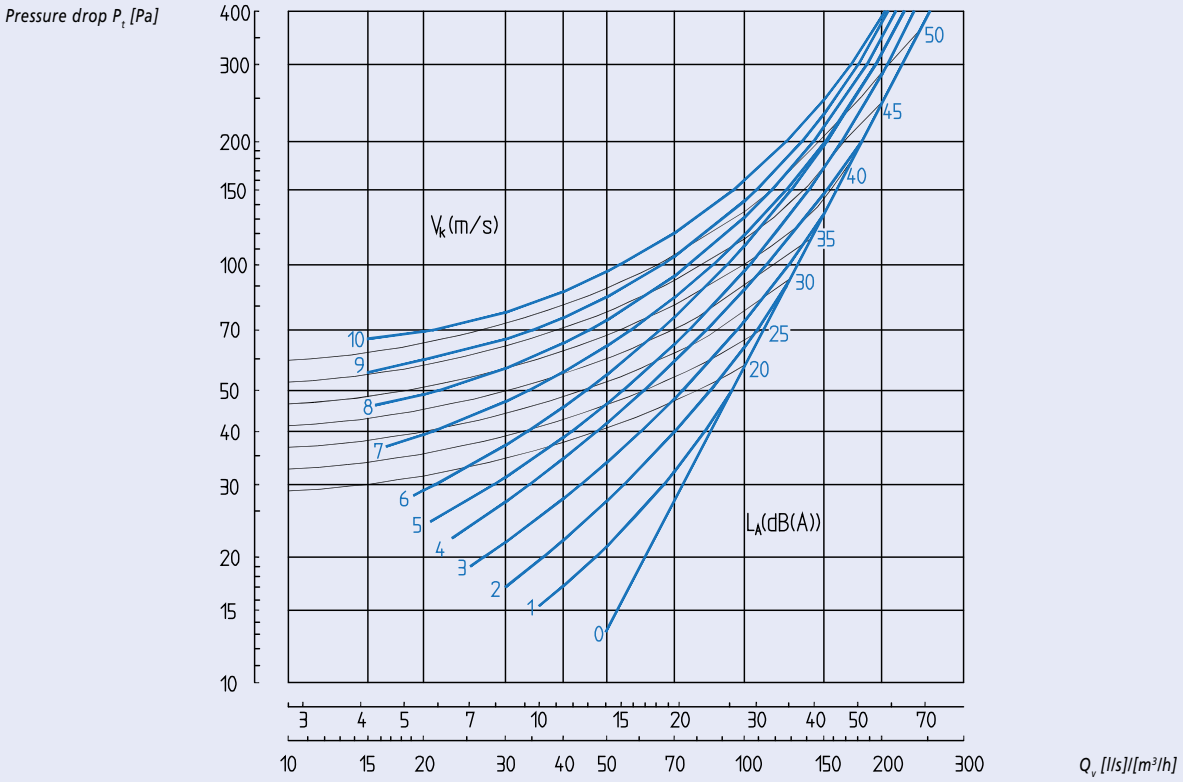
At an end velocity of 0.2 m/s 10 m from the nozzle, the flow rate is 50 m³/h (see nozzle selection graph). At a duct velocity (Vk) of 5 m/s the pressure drop is 46 Pa and the sound level is 25 dB(A=) (see graph sound data).

NOZZLE SELECTION GRAPH

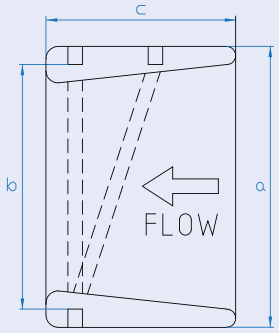


4.3 Direct-fired appliances

SOUND DATA NOZZLE



NOZZLE



Side view nozzle

DIMENSIONS

a	Ø 77 mm
b	Opening Ø 70 mm
c	52 mm

4.3 Direct-fired appliances

INSTALLATION DESIGN

You can use the graph below to make the correct choice for length of throw, air volume and appliance capacity. The duct system must be designed for an air velocity between 4 and 5 m/s (see selection table chapter General design information').

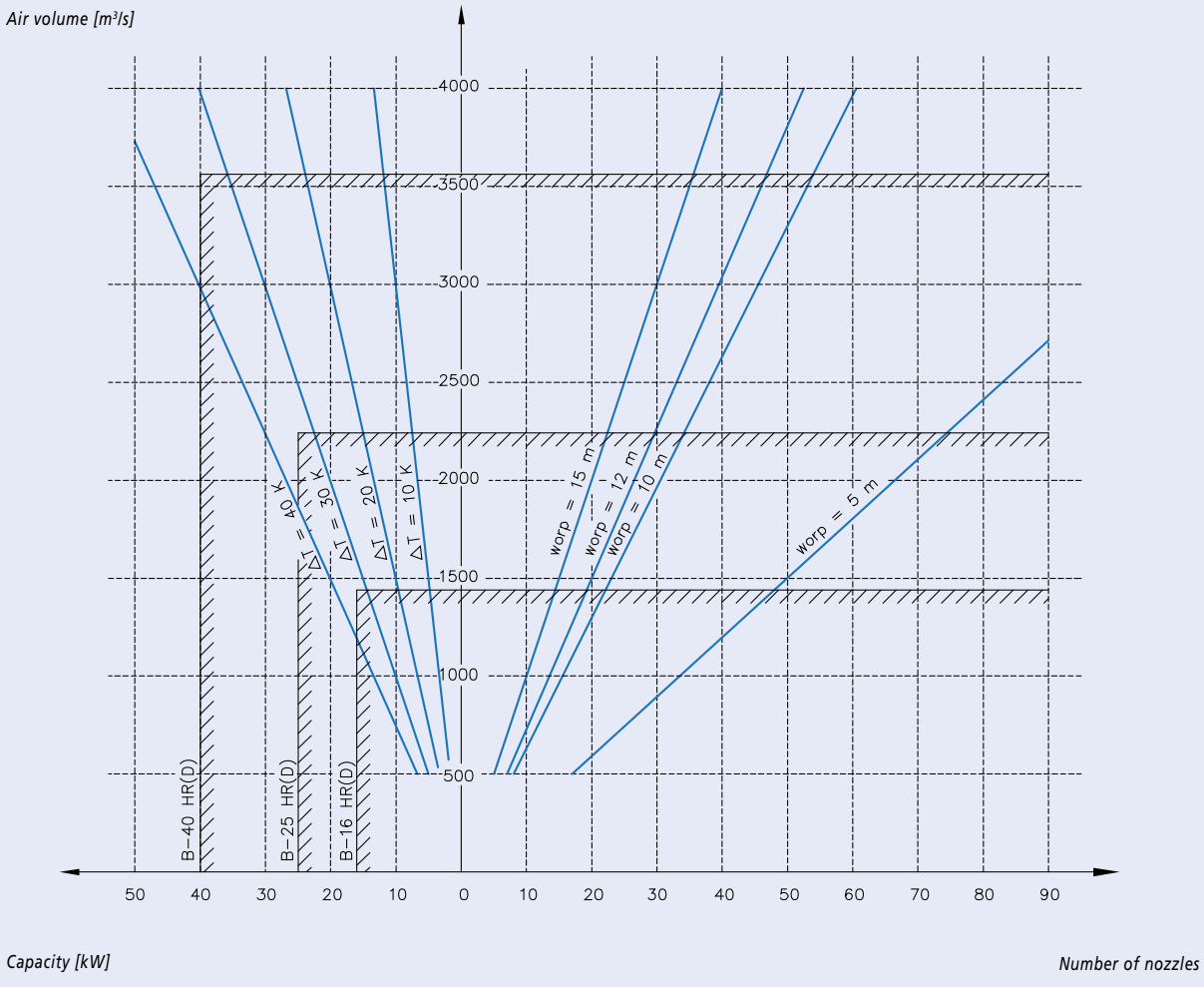
A good design should comply with the applicable standard air engineering and comfort conditions. A rule of thumb is that the air velocity at the workplace must be lower than 0.20 - 0.25 m/s.

The nozzle jet stream must always be above the occupied area of 2 m.

The maximum air resistance for the Allure application in a duct system is 70 Pa per nozzle.

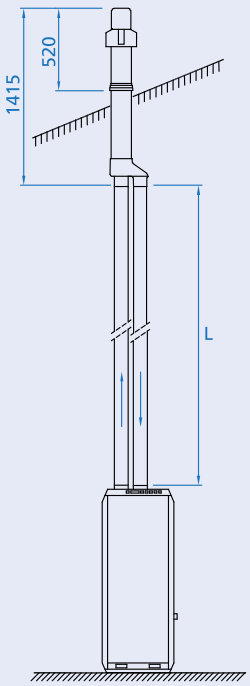
It will be obvious that every design should ensure optimum comfort in the occupied zone. Of course the consultants of Brink Climate Systems B.V. can provide assistance in creating the design and choosing the right materials.

SELECTION GRAPH THROW, AIR VOLUME AND APPLIANCE CAPACITY



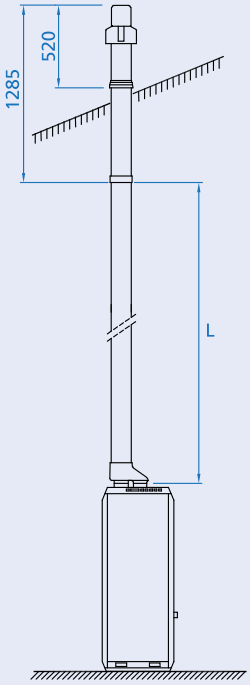
4.3 Direct-fired appliances

FLUE GAS DISCHARGE SYSTEM



Vertical supply and exhaust system parallel

FLUE GAS DISCHARGE SYSTEM



Vertical supply and exhaust system concentric

LENGTH FLUE GAS EXHAUST AND COMBUSTION AIR SUPPLY SYSTEM

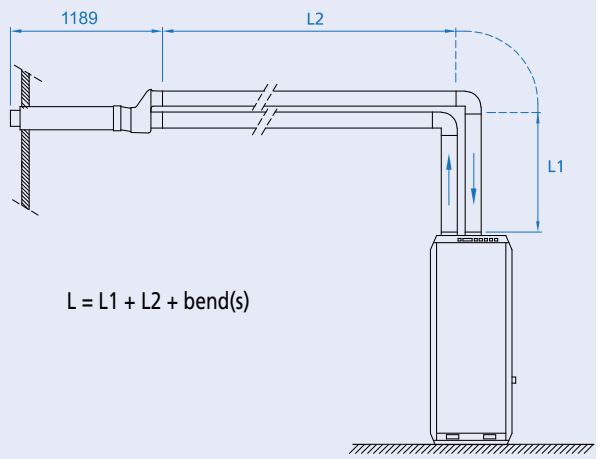
Parallel Appliance	Single walled Ø 80 mm maximum length L [m]
B-16 HR(D)	20
B-25 HR(D)	20
B-40 HR(D)	15
Concentric Appliance	**Ø 80 - 125 mm maximum length L [m]**
B-16 HR(D)	12
B-25 HR(D)	12
B-40 HR(D)	12
Bend (R/D = 0.5) [°]	**Equivalent length [m]**
45	1.00
90	3.00

REMARK

NOTE. When using flexible exhaust tube, we recommend to observe an exhaust length that is 40% shorter than our regular recommended length.

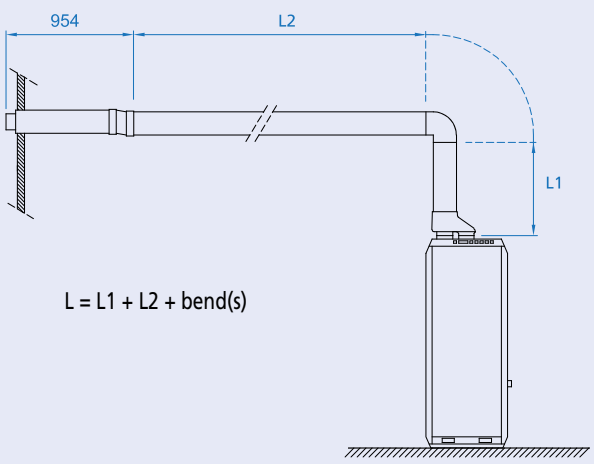
4.3 Direct-fired appliances

FLUE GAS DISCHARGE SYSTEM



Horizontal supply and exhaust system parallel

FLUE GAS DISCHARGE SYSTEM



Horizontal supply and exhaust system concentric

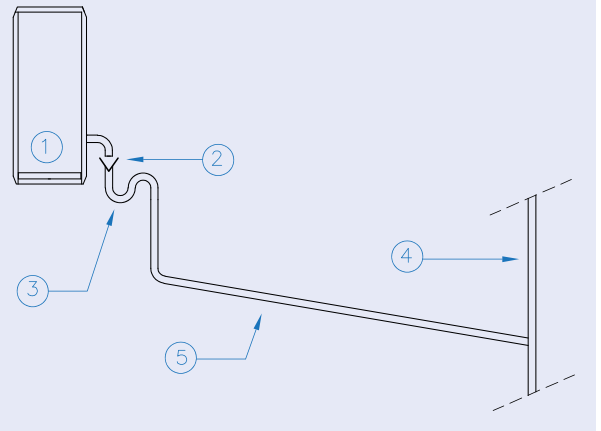
PARALLEL OR CONCENTRIC CONNECTION

The flue gas discharge of HR appliances can be connected in parallel or concentric. The adapter that comes with the roof sleeve can be placed on the exhaust for a parallel system and on the appliance for a concentric system.

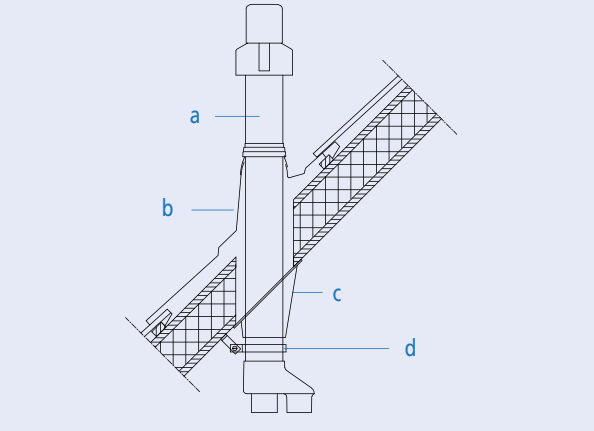
REMARK

For situations that deviate from those described here, we recommend to contact Brink Climate Systems B.V. for advice on supply and exhaust lengths.

CONDENSATE GAS EXHAUST



FLUE GAS SLEEVE



PARTS

1	Appliance
2	Funnel
3	Air trap
4	Waste stack/home drains
5	Pitched discharge line

PARTS

a	Icicle-resistant roof sleeve
b	Synthetic tile
c	Roof sleeve seal
d	Clamping bracket

4.3 Direct-fired appliances

4.3.2 BRINK HRE CENTRAL HEATING APPLIANCE

GENERAL INFORMATION

THE DOUBLE HIGH EFFICIENCY BRINK HRE CENTRAL HEATING APPLIANCE*

The Brink HRE central heating appliance is based on the Intergas HRE appliance. This is an appliance with a high efficiency for heating as well as a high efficiency for domestic hot water. Its secret is in the unique double two-in-one heat exchanger. This heat exchanger limits heat losses to the minimum and ensures maximum heat exchange. The central heating water and the cold domestic water flow directly through the heat exchanger to maximally cool the flue gases and optimally utilise the condensation heat.

CONTINUOUSLY MODULATING CONTROL SYSTEM

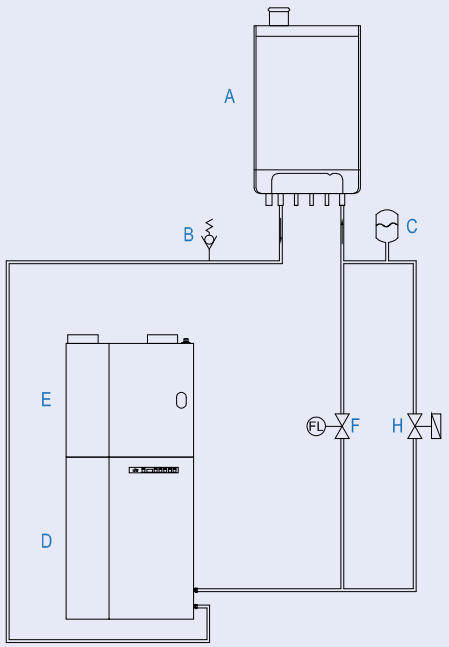
The Brink HRE central heating appliance is as a continuously modulating control system which ensures that the power is automatically adjusted to the heat demand. Moreover, the appliance has a self-learning ECO comfort switch that automatically switches the warm-keeping function of the domestic hot water supply on or off. Two separate copper circuits are integrated in the aluminium heat exchanger. The separate circuits for central heating and hot water and allow separate operation of heating and domestic hot water supply. The domestic hot water supply always prevails over the heating. The two cannot operate at the same time. Every time heat is demanded for heating or hot water supply, the appliance's electronic burner controller operates the fan, opens the gas valve, ignites the burner and continuously monitors and controls the flame, dependent on the required power.

MINIMUM INFLOW TEMPERATURE

The Brink HRE CV appliances combined with air heating make it possible to ensure a comfortable supply air temperature at all times.
Even when warm water is being tapped, the supply is brought to a comfortable temperature. Between the Brink HRE central heating appliance and the Brink Elan air heater a so-called MIT control system (MIT means Minimum Inflow Temperature) is installed. This 'comfort' control system can be switched on and off on the thermostat.

* Due country regulations and exclusive distributors, the export of the Brink HRE central heating appliances must be negociated with the Brink Export Management before purchase orders can be expected.

MIT CONTROL SYSTEM



Wiring diagram MIT control system

PARTS

A	Brink HRE central heating appliance
B	Overflow valve
C	Expansion vessel
D	Elan (indirectly fired air heater)
E	Renovent HR (heat recovery unit)
F	Adjustable flow restrictor
H	Shut-off Minimum Inflow Temperature (MIT)

4.3 Direct-fired appliances

THE BRINK CHARGING WATER HEATER

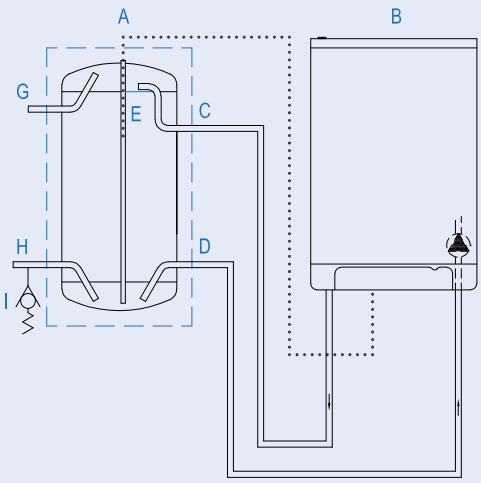
The Brink charging water heater is made of stainless steel and has a capacity of 100 litres. Effective, smooth surface, no sacrificial anode, strong and light are the features of the charging water heater. The entire stock can be tapped. The water heater cannot be "fully drained" because it is layered. The water heater is insulated to limit heat losses. The burner controller of the Brink Kombi Kompakt HRE comes as standard with water heater control.

The Brink charging water heater together with the Brink HRE central heating is the optimum combination. That results in maximum generation yield because the water heater does not contain an exchanger, but the water is directly heated by the Brink HRE central heating appliance.

INSTALLATION CHARGING WATER HEATER

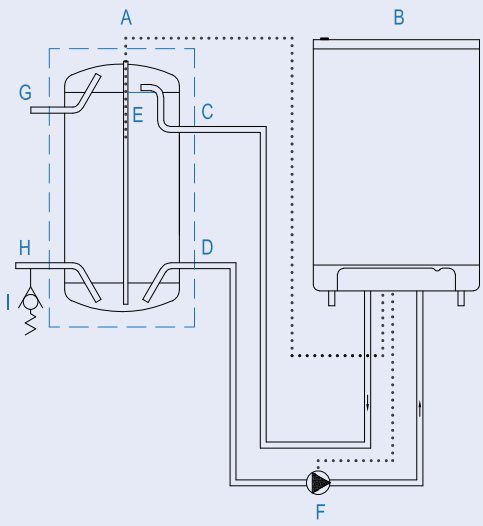
The inlet and outlet of the Brink charging water heater are marked for simple and error-free installation. We recommend to place the Brink charging water heater not too far from the central heating appliance.

BRINK HRE



Charging water heater met Brink HRE central heating appliance Solo

BRINK HRE



Charging water heater met Brink HRE central heating appliance

PARTS

A	Charging water heater
B	Central heating boiler
C	Supply by central heating boiler
D	Return through central heating boiler
E	Water heater sensor DHW
F	DHW pump
G	DHW connection
H	Cold water connection
I	Inlet combination 8 bar

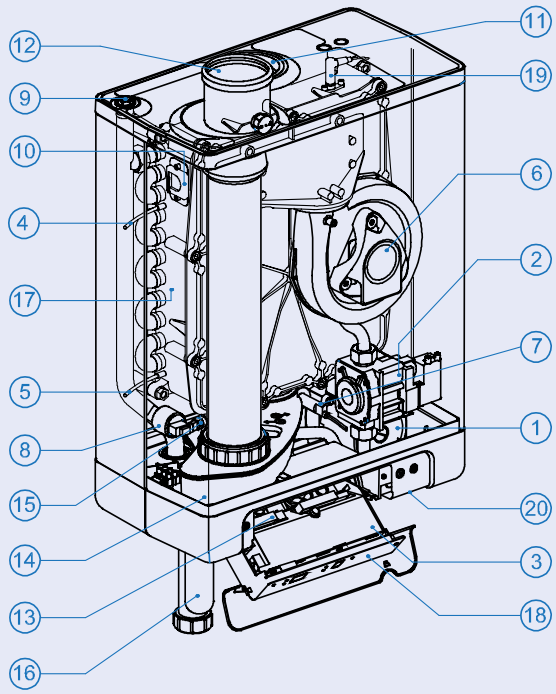
4.3 Direct-fired appliances

LOW ENERGY CONSUMPTION

The energy-efficient operation of the Brink HRE central heating appliance means a contribution to preserving the environment. The use efficiency of no less than 107% for heating and 95.8% for hot water makes it easier to comply with the stringent requirements of the EPS (energy performance standard). Moreover, the appliance complies with the highest Gas mark classification for heating (HR 107), hot water (HRww) and the Gas mark environment label 'Cleaner combustion'.

The Brink HRE central heating appliance is maintenance-friendly. All parts of the appliance can easily be accessed from the front.

BRINK HRE CENTRAL HEATING APPLIANCE



Brink HRE central heating appliance exploded view

PARTS

1	Central heating pump
2	Gas block
3	Burner controller with control panel
4	Supply sensor S1
5	Return sensor S2
6	Fan
7	Flow switch
8	Pressure sensor CV
9	Manual bleeder
10	Gauge glass
11	Air supply
12	Flue gas exhaust adapter
13	Connection block/terminal lis X4
14	Condensate discharge bin
15	Hot water sensor S3
16	Air trap
17	Heat exchanger
18	Control panel and readout
19	Ionisation / igniter pin
20	Position type plate

4.3 Direct-fired appliances

TECHNICAL DATA BRINK HRE CENTRAL HEATING APPLIANCE		
Appliance type	36/30 HRE	28/24 HRE
Nom. capacity at 80/60 [kW]	7.1 - 26.3	6.9 - 22.8
Nom. capacity at 50/30 [kW]	7.8 - 27.1	7.6 - 23.4
Use efficiency HR Heating (Hi) [%]	107	107
Use efficiency HR Hot water (Hi) [%]	95.8	93.9
Annual tap efficiency EPS (Hs)	0.85	0.825
Tap threshold [l/min.]	2	2
Gas mark CW class	5	4
DHW quantity 60 °C [l/min.]	9	7.5
DHW quantity 40 °C (mixed) [l/min.]	15	12.5
Max. DHW temperature [°C]	60	60
Weight [kg]	36	33
H X W X D [mm]	710 x 450 x 240	650 x 450 x 240
Propane version	On request	On request

4.3 Direct-fired appliances

4.3.3 PASSIVE HOUSE

GENERAL INFORMATION

THE PASSIVE HOUSE APPLIANCE

The Passive House Appliance is an integrated solution for heating, high-efficiency ventilation and hot water supply for dwellings that comply with the passive house standard. Brink Climate Systems developed two Passive House Appliances. Version 1: Appliance with a maximum capacity of 3.5 kW. Version 2: Appliance with a higher capacity up to 10kW.

In both appliances heat is generated with a solar thermal collector and stored in a hot water vessel. The vessel supplies domestic hot water and hot water for space heating. If the sun does not apply sufficient heat, part of the vessel will be kept at the right temperature by a high-efficiency Brink HRE central heating boiler.

In version 1, the entire capacity for space heating is taken from the solar water heater. The postheater always keeps the fresh ventilation air at a comfortable temperature and that the dwelling is heated with for instance convectors.

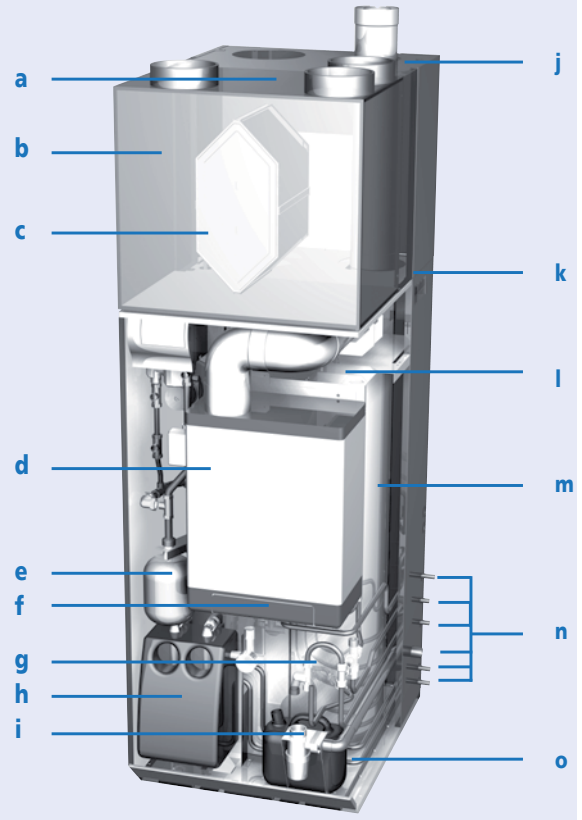
In version 2, some 3.5 kW of heat from the solar water heater is transferred by the postheater to the ventilation air and, if required, one or more convectors can be connected to the central heating section. Again the maximum yield is taken from the solar water heater and more capacity is available if desired or needed.

PRECONDITIONS

The Passive House Appliance is designed for dwellings that comply with strict preconditions with regard to energy consumption:

- 15 kWh/m² for space heating.
- 120 kWh/m² primary total including household use (48 kWh/m² downstream of the power plant.
- Very highly insulated envelope with high comfort level throughout.
- Designed to ensure that the dwelling can be heated with a minimum of installation engineering systems and that active cooling is not necessary.
- Availability of gas, water and electric power.

PASSIVE HOUSE APPLIANCE



PARTS

a	Ventilation air 'to dwelling'
b	Renovent HR
c	Heat exchanger
d	Central heating appliance
e	Expansion vessel
f	Control panel central heater
g	Inlet combination
h	Solar pump
i	Air trap
j	Flue gas discharge
k	Electric connections
l	Postheater
m	Water heater
n	Gas supply, DHW connection, condensate discharge, solar system connection, extra connection convector(s) or radiator(s)*
o	Collector vessel

* Details connections on request

4.3 Direct-fired appliances

TECHNICAL INFORMATION

HOT WATER TANK

A solar collector is used to generate heat which is stored in a solar water heater. That is the heart of the system. The solar water heater supplies heat and domestic hot water. The hot water tank has a capacity of 200 litres of sanitary water for maximum utilisation of solar energy to guarantee perfect hot water comfort. Primary heating of the hot water tank is through the solar thermal collectors and, if necessary, a high-efficiency Brink HRE central heating boiler heats it further.

In version 1, a pump is switched that indirectly uses the hot water from the solar water heater for the delivery systems (postheater behind Renovent HR en convector connection). The room thermostat controls the pump for space heating by, for instance, convectors.

In version 2, the full power of 3.5 kW from the solar water heater is used for the ventilation air postheater, but an additional connection may optionally be used. Then this additional connection is fed by the Brink HRE. The hot water tank supplies sufficient hot water to meet ample domestic hot water requirements.

PARTS

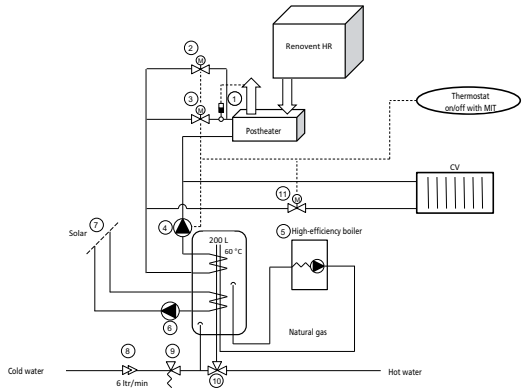
The appliance comes with a Renovent HR heat recovery unit. Air flow rates up to 400 m/h can be realised. At all times, the occupant can control the exhaustion with a simple multiple switch. The air is distributed across the rooms on the basis of the ventilation calculation or the heat loss calculation. Which calculation is used depends on the choice of appliance, which usually is connected with the dwelling volume A Passive House always requires custom-made solutions. Many factors have an influence, for instance dwelling's volume, its location, number of people, new project, renovation etc. The Passive House appliance must be fitted with a provision that makes it possible to suck in the required quantity of outside air also at temperatures below 0˚C and to transfer to it the heat from the exhaust air (1. Electric preheater, 2. soil exchanger).

APPLICATION

The Passive House Appliance is suitable for newly built dwellings that are almost energy neutral, known as Passive Houses. So far passive houses are mainly being built in German-speaking countries, Scandinavia and Belgium. Interest for passive houses is on the increase in the Netherlands.

4.3 Direct-fired appliances

BASIC OPERATION PASSIVE HOUSE APPLIANCE

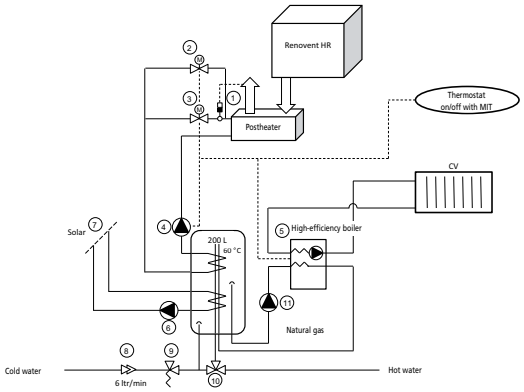


Basic diagram Passive House Appliance up to 3.5 kW

PARTS

1	Heimeier thermostat with remote sensor
2	Honeywell zone diffuser
3	Central heating pump
4	Brink Solo HRE 12
5	Solar pump
6	Thermostatic mixing diffuser
7	Air restrictor
8	2 solar collectors

BASIC OPERATION PASSIVE HOUSE APPLIANCE



Basic diagram Passive House Appliance up to 10 kW

PARTS

1	Heimeier thermostat with remote sensor
2	Honeywell zone diffuser
3	Central heating pump
4	Brink HRE 24/18
5	Solar pump
6	Thermostatic mixing diffuser
7	Air restrictor
8	2 solar collectors
9	DHW pump

TECHNICAL SPECIFICATIONS PASSIVE HOME APPLIANCE

Technical data	Passive House
Heat recovery [m³/h]	up to 400*
Efficiency [%]	95
Water capacity solar water heater [L]	200
Heating from solar water heater [kW]	3.5
Heating capacity version 1 [kW]	Approx. 3.5
Heating capacity version 2, through postheater heat recovery / central heating connection [kW]	Approx. 3.5 / 10
Dimensions [B x H x D in mm]	675 x 2090 x 900

* Heat recovery up to 300 m³/h availabe on request.

GENERAL INFORMATION

TOP COOLING SYSTEM

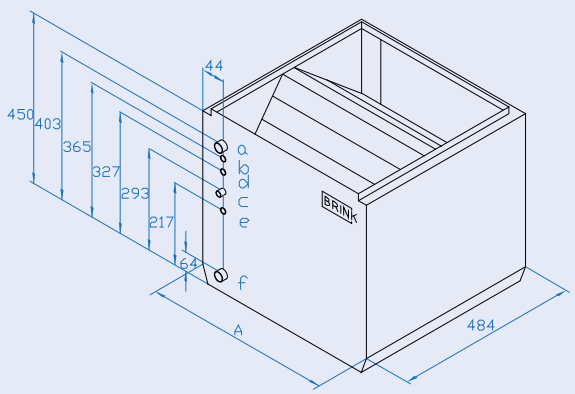
An air heating system can simply be extended with top cooling. A complete kit is available for that purpose. This kit includes a cooling block (evaporator) a condensing unit and an interface. Adapted to the colour of the air heater, the cooling block has a cream (RAL 1013) epoxy sheet steel casing with internal insulation.

Cooling requires higher air flow rates than space heating. Installation of the cooling block increases the system resistance at nominal air flow rate by approximately 50 Pa.

The condensing unit (filled with coolant R 410A) and the cooling block are interconnected by a suction and fluid line and an electric control. The maximum length with the standard assembly kit is 15 m (refer to the installation instructions for deviating lengths). The condensate discharge of the cooling block can be connected to the sewage system via an air trap.

The cooling installation control system is fully integrated in the Allure appliances and the Elan 25.

COOLING BLOCK ALLURE



Cooling block Allure Upflow (HR)

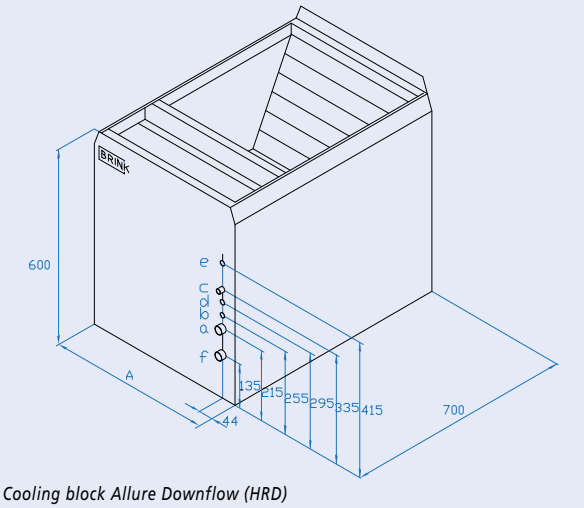
SLEEVES

a	Connections suction line
b	Sleeve pressure compensation line
c	Connection fluid line
d	Sleeve cable defroster thermostat
e	Sleeve cable temperature sensor
f	Sleeve condensate discharge

DIMENSIONS (IN MM)

Type	A
Allure B-16 HR	400
Allure B-25 HR	500
Allure B-40 HR	600

COOLING BLOCK ALLURE



Cooling block Allure Downflow (HRD)

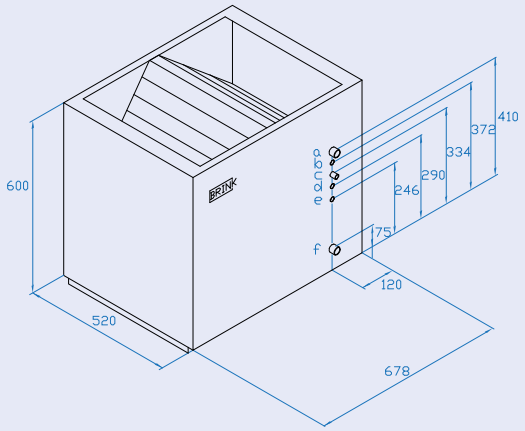
SLEEVES

a	Connections suction line
b	Sleeve pressure compensation line
c	Connection fluid line
d	Sleeve cable defroster thermostat
e	Sleeve cable temperature sensor
f	Sleeve condensate discharge

DIMENSIONS (IN MM)

Type	A
Allure B-16 HRD	400
Allure B-25 HRD	500
Allure B-40 HRD	600

COOLING BLOCK ELAN 25

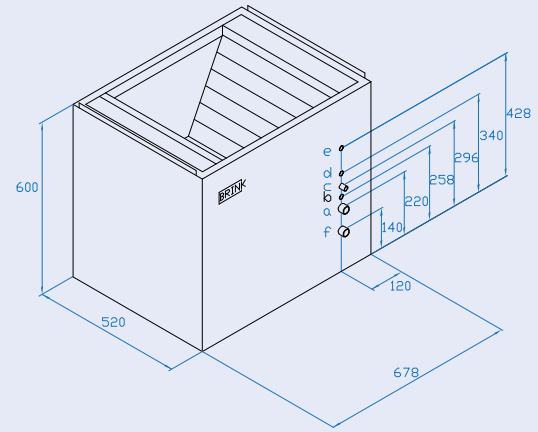


Cooling block Elan 25 Upflow

SLEEVES

a	Connections suction line
b	Sleeve pressure compensation line
c	Connection fluid line
d	Sleeve cable defroster thermostat
e	Sleeve cable temperature sensor
f	Sleeve condensate discharge

COOLING BLOCK ELAN 25



Cooling block Elan 25 Downflow

SLEEVES

a	Connections suction line
b	Sleeve pressure compensation line
c	Connection fluid line
d	Sleeve cable defroster thermostat
e	Sleeve cable temperature sensor
f	Sleeve condensate discharge

TECHNICAL INFORMATION

TECHNICAL SPECIFICATIONS TOP COOLING

	B-16 HR(D)	B-25 HR(D)	B-40 HR(D)	Elan 25
Cooling capacity [kW]	7.1	10.0	12.50	10.0
Weight condensing unit [kg]	44	62	98	62
Width condensing unit [mm]	790	900	900	900
Depth condensing unit [mm]	315	330	330	330
Height condensing unit [mm]	578	830	1290	830
Connection diameter suction line ["]	5/8	5/8	5/8	5/8
Connection diameter fluid line ["]	1/4	3/8	3/8	3/8
Refrigerant stopcocks	yes	yes	yes	yes
Capacity measured at:	ARI conditions: 7 °C evaporator, 35 °C outdoor temperature			
Rated power [kW] (dependent on setting){	2.21	3.11	3.89	3.11
Power type [V~/Hz]	230V 50Hz	230V 50Hz	230V 50Hz	230V 50Hz
Fuse [A]	16T	20T	20T	20T
Noise level [dB(A)] at 1 m distance free field	52	54	55	54
Refrigerant type	R410 A	R410 A	R410 A	R410 A
Coolant quantity [kg]	1.7	2.1	3.35	2.1
Weight cooling block Upflow [kg]	20	22	25	31
Weight cooling block Downflow [kg]	29	31	35	31
Minimum condenser air supply temperature [°C]	-10	-15	-15	-15
Setting air flow rate cooling [m^3/h]	1350	2100	3400	2150

INSTALLATION

All connections can be made with the aid of the assembly kit. If the assembly kit is ordered with the cooling kit, the right connection hardware for 15 m connection length will be supplied. Adjusting the top cooling system is a specialist job that requires specific equipment and can only be carried out by a recognized installer.

Full adjustment of the cooling installation can be arranged at a surcharge.

GENERAL INFORMATION

DIFFUSERS

It is recommended to use suitable diffusers for air supply and exhaust in a balanced ventilation system. The supply diffuser is high-inductive and it is provided with a 40 mm raised edge that prevents fouling of ceiling or wall. The diffusers (colour white RAL 9016) come as standard with a strip for a clean zone. In addition, clamping springs allow for easy assembly. The supply diffuser has continuously adjustable control. Making the gap wider increases the flow rate and reduces the resistance.

A high-quality synthetic exhaust diffuser (colour white, RAL 9016) is available for air exhaust. The cone of this diffuser can be adjusted. The exhaust diffuser is a specifically suitable for use in a humid areas.
The setting indication is shown on the inside. The exhaust diffusers have clamping springs and a rubber mounting ring so they can be placed directly in the duct.

The metal supply diffuser (colour white, RAL 9010) is recommended for blowing in air in a air heating system. The supply diffuser comes with clamping springs for easy mounting in the duct. In addition, the diffuser is also available with mounting ring. The control is continuously adjustable. The air flow rate can be modified by turning the inner disc open or shut.

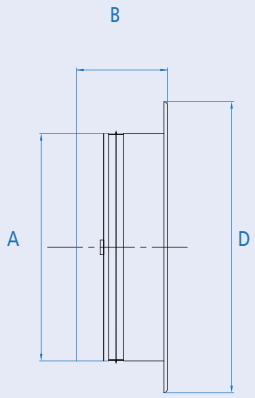
GRILLES

Various grilles and diffusers are available for blowing in hot air and exhausting air. Standard grilles are made of high-quality materials and epoxy coated. In addition, aluminium hot air, floor, and wall return grilles are available. The wall return grilles, also made of aluminium, are fitted with and extruded aluminium edge and shaped aluminium vanes. The vanes are locked at an angle of 40°. The aluminium floor return grilles have an edge and bars of extruded aluminium. The floor-reinforced version has fixed bars. All aluminium grilles are anodised in a satin-gloss natural colour and they have clamping springs for fixation.

The grille is simply mounted in the special grille shoes. If necessary, the grille can be fixed with screws. Because the free passage of the aluminium return grilles is a little smaller than that of the standard return grilles, a somewhat higher air velocity at the grille must be expected when replacing them. As a rule, the resident will not consider this higher velocity a nuisance.

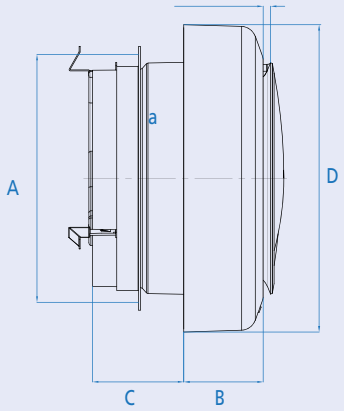
TECHNICAL INFORMATION

SUPPLY DIFFUSER



Side view supply diffuser for ventilation LN, D125

SUPPLY DIFFUSER

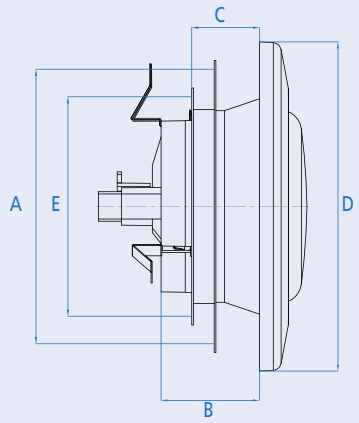


Side view supply diffuser for ventilation D125

SLEEVES

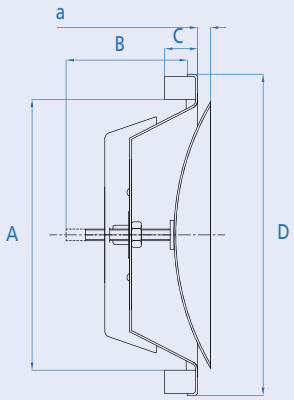
a Diffuser setting

EXHAUST DIFFUSER



Side view synthetic exhaust diffuser for ventilation

SUPPLY DIFFUSER



Side view supply diffuser for heating

SLEEVES

a Diffuser setting

DIMENSIONS SUPPLY DIFFUSER VENTILATION (IN MM)

Type	A	B	C	D
LN, D125	Ø 125	50	-	Ø 165
D125	Ø 125	40	46	Ø 155

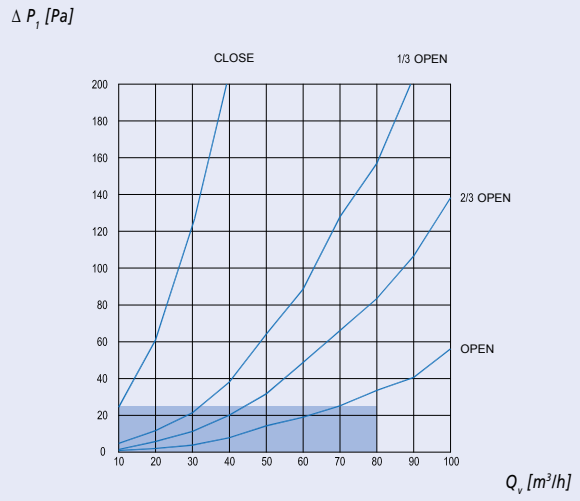
DIMENSIONS EXHAUST DIFFUSER VENTILATION [IN MM]

Type	A	B	C	D	E
D125	Ø 125	45	31	Ø 150	Ø 100

DIMENSIONS SUPPLY DIFFUSER HEATING (IN MM)

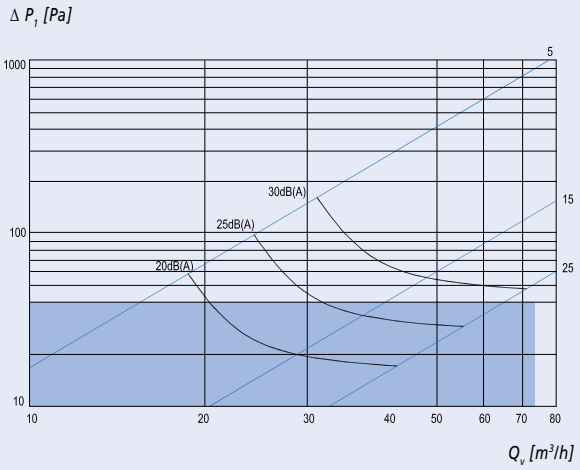
Type	A	B	C	D
D100	Ø 100	49	7	Ø 137
D125	Ø 125	71	7	Ø 164
D150	Ø 150	69	7	Ø 202

SELECTION GRAPH DIFFUSER



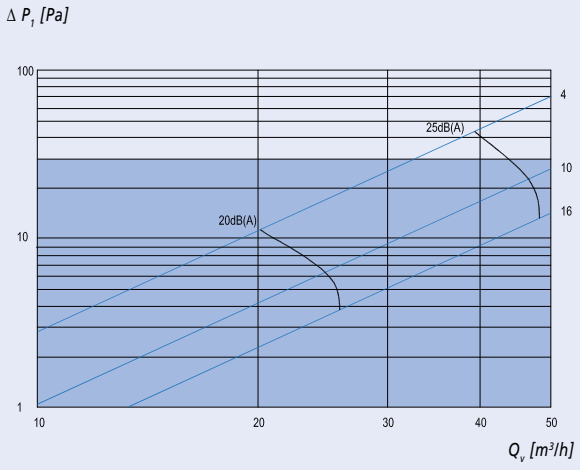
Type LN , D125 (= recommended operating range)

SELECTION GRAPH DIFFUSER



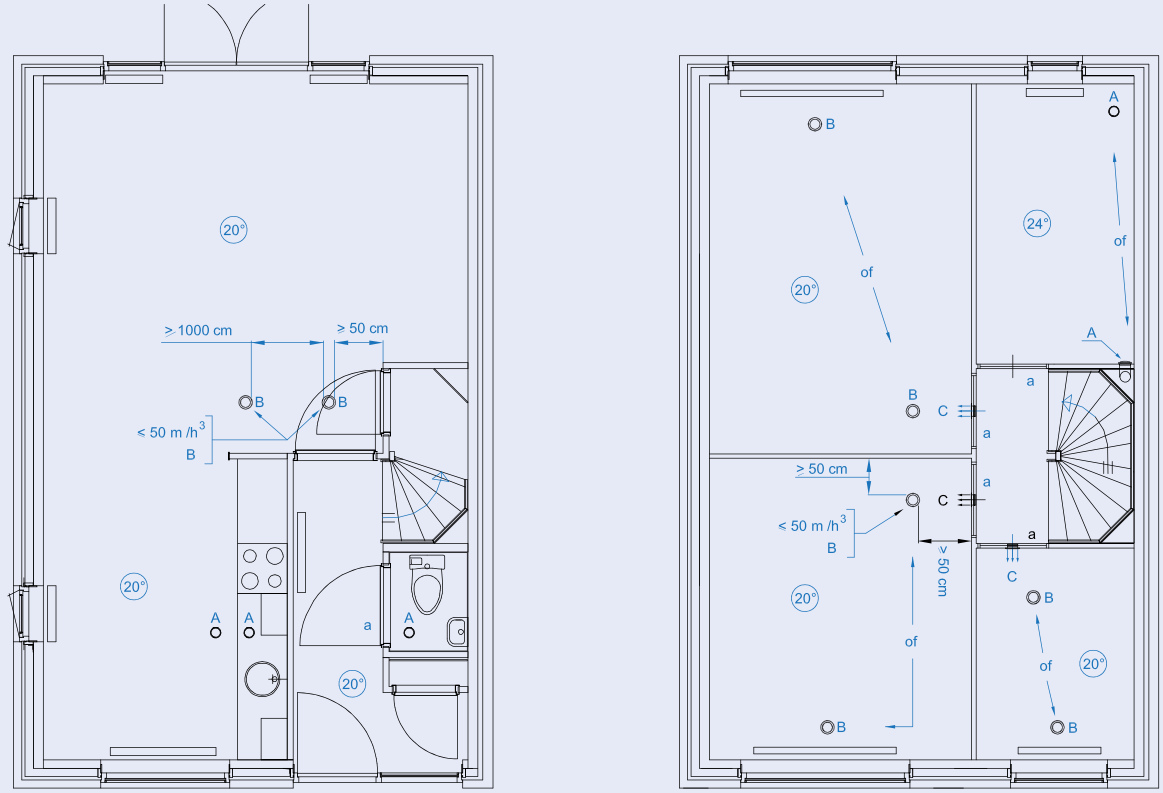
Selection graph exhaust diffuser for ventilation, D125 (= recommended operating range)

SELECTION GRAPH DIFFUSER



Selection graph supply diffuser for ventilation, D125 (= recommended operating range)

SUPPLY AND EXHAUST DIFFUSERS VENTILATION SYSTEMS

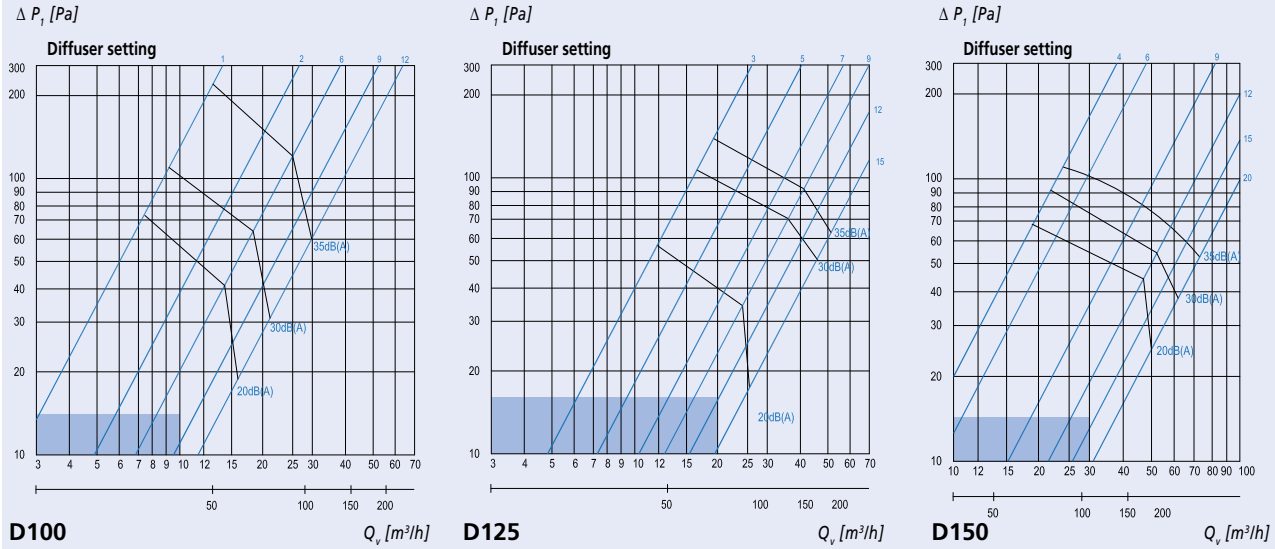


Location supply and exhaust diffusers BG-VD-Model

PARTS

A	Synthetic or metal exhaust diffuser D125
B	Supply diffuser D100 or D125
C	Supply diffuser LN, D125
a	Door gap 20 mm

SELECTION GRAPHS DIFFUSERS



Selection graphs supply diffusers for heating D100, D125 and D150 (= operating range)

RECOMMENDED MAXIMUM AIR VELOCITIES AND AIR FLOW RATES FOR OUTLET GRILLES

Grille size	305 x 57 mm passage 0.012 m²		305 x 102 mm passage 0.022 m²	
	Velocity [m/s]	Air flow rate [m³/h]	Velocity [m/s]	Air flow rate [m³/h]
In floor/wall	2	86	2	158
Low in living room wall	1	43	1	79
High in the wall or from the ceiling	3	130	3	238

SELECTION TABLE WALL AND CEILING RETURN GRILLES

Air flow rate wall [m³/h]	Free flow opening from grill [cm²]	Horizontal wall return grille [mm] [width x height]	Vertical return grille [mm] (width x height)
up to 220	360	305 x 152	152 x 305
221-300	490	305 x 203	203 x 305
301-405	660	406 x 203	203 x 406
406-450	740	305 x 305	305 x 305
451-490	800	508 x 203	203 x 508
491-605	990	406 x 305	305 x 406
606-750	1220	508 x 305	305 x 508
	1230	762 x 203	203 x 762
751-1130	1859	762 x 305	305 x 762
1131-1250	2040	508 x 508	508 x 508

SELECTION TABLE FLOOR RETURN GRILLES

Air quantity floor [m³/h]	Free passage of grille [cm²]	Return grilles [mm] (width x length)
up to 230	320	150 x 300
231-280	390	150 x 350
281-315	440	200 x 300
316-430	600	200 x 400
431-475	660	150 x 600
476-545	760	200 x 500
546-605	840	150 x 750
606-830	1150	200 x 750
831-840	1170	300 x 500
841-900	1250	400 x 400
901-1275	1770	300 x 750
1276-1430	1990	500 x 500

7.1 Brink Air Excellent System

GENERAL INFORMATION

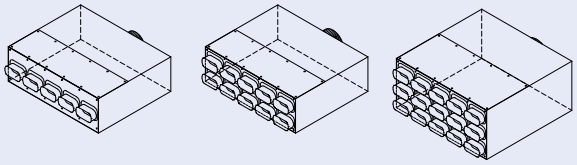
AIR DISTRIBUTION SYSTEM

Brink Climate Systems developed a completely new synthetic air distribution system for balanced information with heat recovery, the Brink Air Excellent System. The Brink Air Excellent System is modular system composed of a flexible duct, various accessories and a manifold. The flexible duct is available in 1 size (50 x100 mm), suitable for a volume flow rate of 30-35 m/h at the flow velocity of approx. 3 m/s. The flexible duct can be connected to the central manifold and the Brink diffusers with the aid of various accessories.

BENEFITS

- Flexible duct
- Various accessories
- Maximum height 50 mm
- Smooth inner wall
- Maintenance friendly
- Antibacterial
- Antistatic
- Easiest relation: 'plug and play'
- Various manifolds
- Suitable for heat recovery and mechanical ventilation

MANIFOLDS

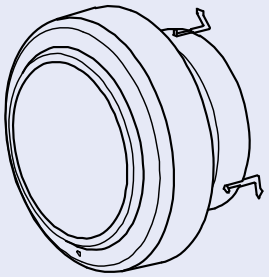


Manifold, 5 connections, Ø 125 mm

Manifold, 10 connections, Ø 150 mm

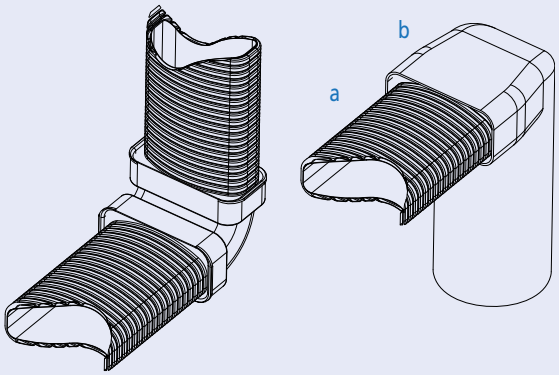
Manifold, 15 connections, Ø 180 mm

DIFFUSER



Supply diffuser

VERTICAL BEND AND COUPLER

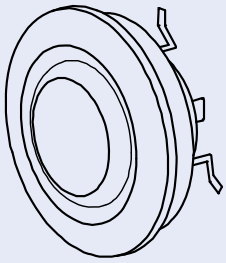


Vertical bend and connector for the Brink diffuser

PARTS

a	Flexible duct 50x100 mm
b	Sealing sleeve

DIFFUSER



Exhaust diffuser

7.2 Brink Air System

GENERAL INFORMATION

PARTS

The distribution system is used for supply and discharge of ventilation air. The heat recovery unit arranges transfer of heat from the exhaust air to the fresh, colder outdoor air. The air distribution system controls the proper distribution of air to the rooms.

Optimum air distribution is achieved by placing two manifolds between the heat recovery unit and the supply and exhaust points. These manifolds have internal sound insulation. The ducts distribute the air from and to the various rooms. The supply diffusers bring fresh air into the living room and the bedrooms. The spent air is then exhausted from the kitchen, bathroom and the toilets. The inside of the duct is smooth, so the air resistance is low. The duct is suitable to be incorporated in concrete.

MOUNTING

The distribution system is suitable for all types of dwellings. The flexible synthetic ducts make assembly of the installation simple. The distribution system does not have any adapters or angle fittings. The ducts are fitted with a rubber ring and can be connected using snap sleeves. The ducts can simply be cut to length without special tools being required. Then a sealing ring is placed on the synthetic duct. That prevents leakage between the fittings and the flexible synthetic ducts.

GENERAL INFORMATION

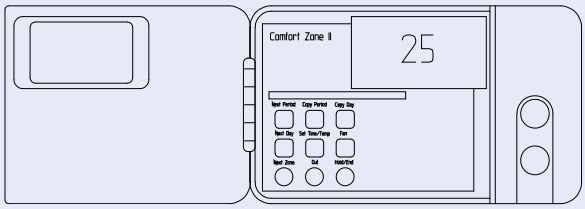
THERMOSTATS

Brink offers a complete range of thermostats for excellent temperature control. The thermostats are selected to form an integrated system together with the air heater controller. This results in very stable room temperature, realising a perfect interior climate. If required, a thermostat can be extended as clock thermostat.

COMFORT ZONE SYSTEM

A thermostat is the simplest control system. On request, advice can be supplied on complete zone control that satisfies all comfort wishes. The Comfort Zone System can be used to control the air heating installation in four or eight zones. The installation is extended with a bypass duct and four or eight thermostat-controlled shut-off diffusers. These diffusers must be activated with shielded cables. This system realises individual temperature control per zone. A connection box Comfort Zone is available for a good combination with an Allure air heater.

SYSTEM CONTROLLER



System controller Comfort Zone System

GENERAL INFORMATION

FILTERS

Brink air heaters and heat recovery units feature dust filters. These filter the dust from the air. The standard filters in the appliance come under class G3. This filter is used in conditions with normal dust load. The G3 filter removes 50 to 70% of the particles larger than 10 µm, including pollen, spores, hairs, sand and fabric fibres.

For various appliances the filter can be replaced by a fine dust filter (class F6). The F6 filter is used in the event of moderate to high dust load. This filter removes 99% of all dust particles larger than 10 µm and 95 to 99% of all particles larger than 5 µm, including cement dust, pollen and house dust mite faeces.

MAINTENANCE

The filters must be replaced during annual maintenance. The user must regularly clean the filters. Please refer to the installation instructions of the appliance in question.

TECHNICAL INFORMATION

FILTER COMPARISON

Dust load	G3	F6
Dust (PM 10)	••••	••••
Fine dust (PM 2.5)		••••
Pollen	••	••••
Spores	••	••••
Hairs	••••	••••
Sand	••••	••••
Textile threads	••	••••
Cement dust	••	••••

•• = good, •••• = excellent

FILTER CAPACITY (% FILTERED DUST PARTICLES)

Dust particles [µm]	G3	F6
< 10	70 - 85	> 99
< 5	35 - 70	95 - 99
< 3	15 - 35	85 - 95
< 1	5 -15	50 - 65
< 0.5	0 - 5	20 - 40
< 0.2	-	10 - 25
< 0.1	-	5 - 15

11.1 General design information

GENERAL INFORMATION

SELECTION TABLES

The Brink air heating system is a low-pressure system. The duct construction principle is based on creation of a pressure in the ducts from 40 to a maximum of 100 Pa. The maximum air velocity in the main ducts is 4 m/s, in the branches to the grille it is 2 m/s.

A low pressure system has major advantages compared to a high-pressure system. That is because the electric rated power of the system fan and the noise level in the ducts are low.

As a solid basis for the above principle, we have compiled selection tables outlining the above matters.

ACOUSTIC PROVISIONS

Air heating has some sound sources that may cause nuisance due to transmission through the duct system.

A: The appliance sound (fan)

B: The air flowing through the ducts system and grilles.

C: The burner

These sources can be attenuated in such a manner that the sound level stays well below the limits of the standard NEN 1070. Apart from special circumstances, this can be achieved in practice.

The sound absorbing provisions must be made directly on installation. Retrofitting acoustic provisions usually involves high costs.

OPENINGS

The only revealed parts of an air heating installation are the air grilles. A good reason to ensure that they are installed neatly. The dimensions of the openings depend on the grilles or air heaters used. If the contractor is informed in advance what openings are required, installing the air heating system becomes simpler and the result looks better.

MOUNTING DETAILS

Designs can be based on standard details, composed of standard parts. Reference to a detail number shows the correct dimensions, a selection of parts and an overview of the assembly.

DRAWING SYMBOLS

Brink Climate Systems B.V. uses drawing symbols when making a design drawing. These are available in digital form on request.

MADE-TO-MEASURE ADVICE

The Brink Climate Systems B.V. consultants can design a complete installation for you at a fee. That guarantees a properly performing, comfortable installation.

COURSE DESIGNING A HEAT RECOVERY INSTALLATION

Brink Climate Systems compiled the main design and realisation aspects in a handy booklet. We would be happy to share that knowledge with you through our course 'Designing a heat recovery installation'. You can enrol for this course on our website www.brinkclimatesystems.nl.

SELECTION TABLES

SELECTION TABLE DUCTS

Duct diameter [mm]	Air flow rate [m³/h]
813 x 203	2550-2176
711 x 203	2175-1786
610 x 203	1785-1406
508 x 203	1405-1106
406 x 203	1105-766
305 x 203	765-471
203 x 203	470 or less

11.1 General design information

SELECTION TABLE SPIRAL-SEAM PIPES			
Duct diameter [mm]	Air flow rate [m³/h]		
	2 m/sec [m³/h]	3 m/sec [m³/h]	4 m/sec [m³/h]
100	56	85	115
125	88	132	180
150	127	190	255
180	183	275	365
200	226	339	450
225	284	429	575
250	353	529	705
300	507	763	1015

RECOMMENDED MAXIMUM AIR VELOCITIES AND AIR FLOW RATES FOR OUTLET GRILLES				
Grille size	305 x 57 mm passage .012 m²		305 x 102 mm passage .022 m²	
	Velocity [m/s]	Air flow rate [m³/h]	Velocity [m/s]	Air flow rate [m³/h]
In floor/wall	2	86	2	158
Low in living room wall	1	43	1	79
High in the wall or from the ceiling	3	130	3	238

SELECTION TABLE WALL AND CEILING RETURN GRILLES			
Horizontal wall return grille [mm] (width x height)	Vertical return grille [mm] (width x height)	Free flow opening of grille [cm²]	Air flow rate wall [m²/h]
305 x 152	152 x 305	360	up to 220
305 x 203	203 x 305	490	221-300
406 x 203	203 x 406	660	301-405
305 x 305	305 x 305	740	406-450
508 x 203	203 x 508	800	451-490
406 x 305	305 x 406	990	491-605
508 x 305	305 x 508	1220	606-750
762 x 203	203 x 762	1230	606-750
762 x 305	305 x 762	1859	751-1130
508 x 508	508 x 508	2040	1131-1250

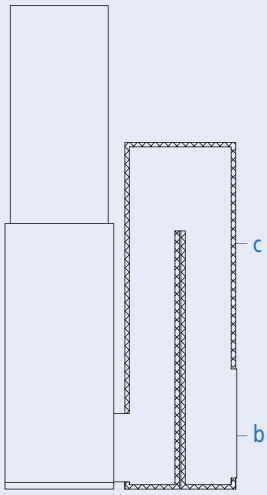
11.1 General design information

SELECTION TABLE FLOOR GRILLES		
Return grilles [mm] (width x length)	Free passage of grille [cm²]	Air flow rate wall [m³/h]
150 x 300	320	up to 230
150 x 350	390	231-280
200 x 300	440	281-315
200 x 400	600	316-430
150 x 600	660	431-475
200 x 500	760	476-545
150 x 750	840	546-605
200 x 750	1150	606-830
300 x 500	1170	831-840
400 x 400	1250	841-900
300 x 750	1770	901-1275
500 x 500	1990	1276-1430

SOUND ABSORBING PROVISIONS IN DUCTS LEADING AWAY FROM ROOMS			
Flow rate [m³/h]	Muffler Ø [mm]		Muffler length acoustic hose [mm]
	Internal	*External*	
q_v<140	100	200	1000
140<q_v<300	150	250	1000
300<q_v<400	200	300	1500
400<q_v<550	250	300	2000
550<q_v<850	250	300	2500
to other spaces than rooms			750

11.1 General design information

BYPASS DUCT



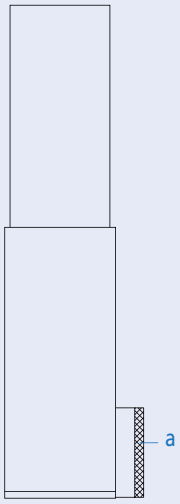
Acoustically insulated bypass duct

KEY

b Return air

c Insulate internally with acoustic insulation 25 mm

BYPASS DUCT

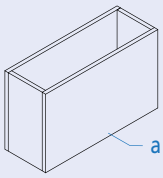


Acoustic return plate

KEY

a Acoustic return plate

OPENINGS



Timber casing

KEY

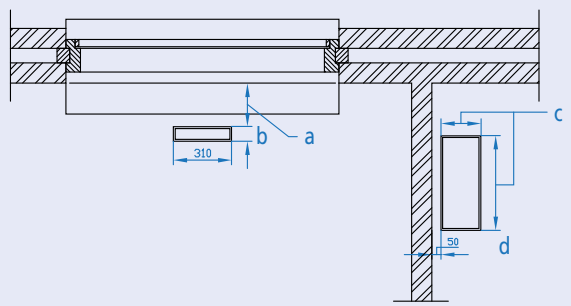
a Maximum 10 mm plywood

REMARK

Timber casing can be used for hot air, floor and wall grilles. To be realised by third parties.

11.1 General design information

HOT AIR GRILLE



Hot air grille in floor

KEY

a	Minimum 250 mm
b	Hot air grille 305 x 57 mm, opening 310 x 60 mm, or Hot air grille 305 x 102 mm, opening 310 x 110 mm
c	Opening equal to stated grille size -10 mm (for free return through underfloor space)
d	Return air grille in floor

REMARK

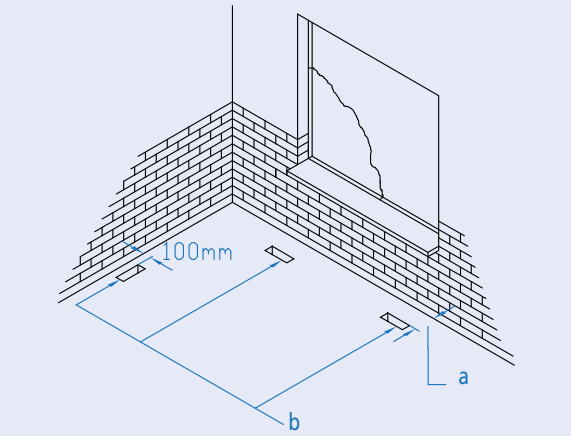
1 Grille placed low in the wall: underside opening 50 mm above skirting

2 Grille placed high in the wall: top opening 50 mm below underside ceiling

3 Floor, wall and ceiling grille openings fitted with timber casing

4 Observe stated grille size when using return ducts

OPENINGS

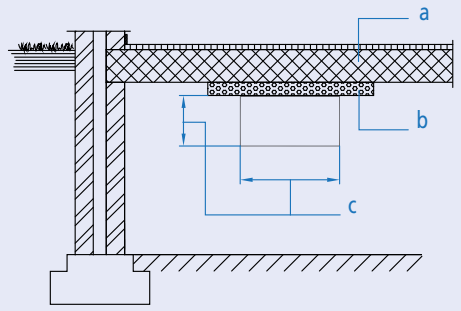


Floor openings for hot air grilles

KEY

a	Minimum 250 mm
b	Incorporated floor opening

OPENING



Foundation opening

KEY

a	Timber or system floor
b	If necessary, place concrete lintel
c	Opening 100 mm larger than duct size because of insulation, opening for round pipes D125 = Ø 200

REMARK

1 The missing duct sizes are stated in the design drawing.

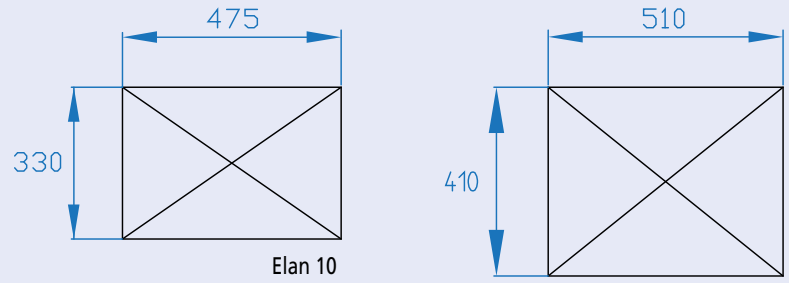
2 In all cases the duct height is 200 mm, unless indicated differently on the design drawing.

3 Top opening is underside floor, or joisting or lintel respectively.

4 Top opening round pipe 50 mm below underside floor, or joisting or lintel respectively.

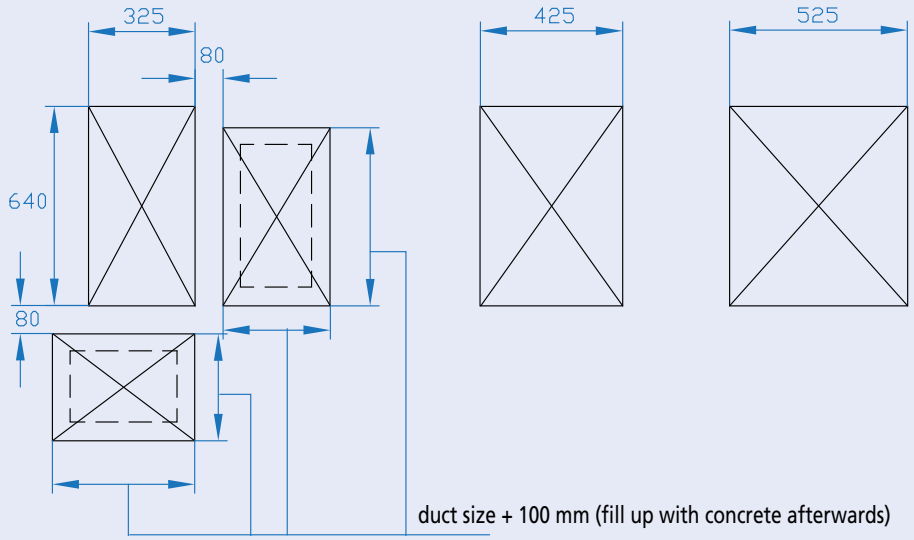
11.1 General design information

FLOOR OPENING ELAN



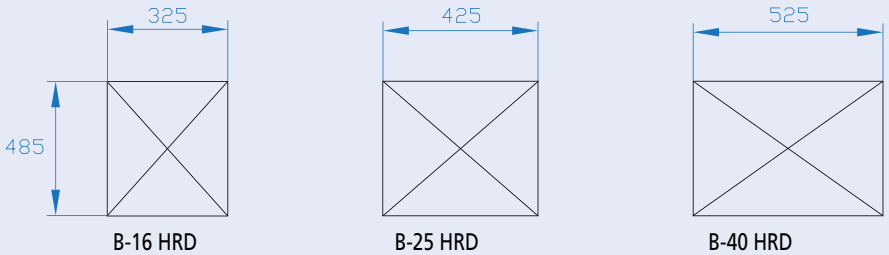
Floor opening Elan (in mm)

FLOOR OPENING ALLURE



Floor opening Allure Upflow (in mm)

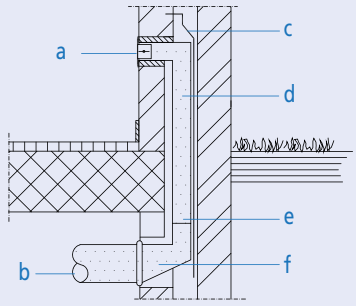
FLOOR OPENING ALLURE



Floor opening Allure Downflow [in mm]

11.1 General design information

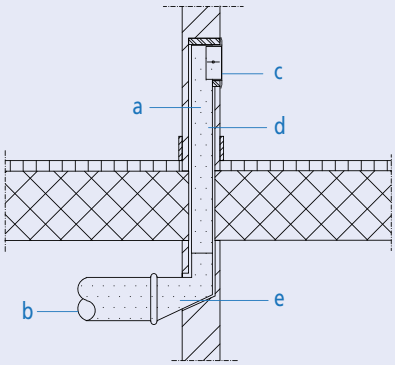
MOUNTING DETAIL WALL GRILLE



Wall grille (detail number 100)

KEY	
a	Hot air grille 305 x 57 or 305 x 102 mm
b	Pipe Ø 125 mm
c	Loderite
d	Square box wall grille
e	Insulate duct
f	Square grille shoe

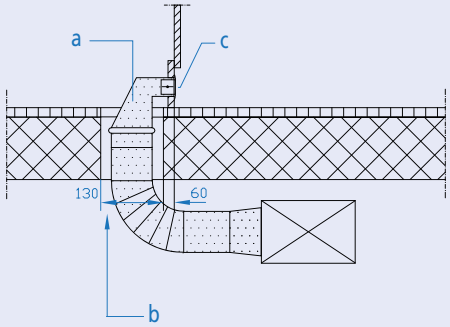
MOUNTING DETAIL WALL GRILLE



Wall grille (detail number 101)

KEY	
a	Square box wall grille
b	Pipe Ø 125 mm
c	Hot air grille 305 x 57 or 305 x 102 mm
d	Insulate
e	Square grille shoe

MOUNTING DETAIL WALL GRILLE



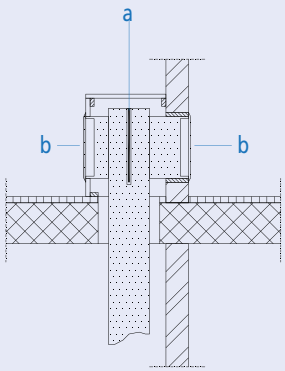
Wall grille in kitchen unit or bath (detail number 102)

KEY	
a	Square grille shoe
b	Floor opening 130 x 310 mm
c	Hot air grille 305 x 57 or 305 x 102 mm, opening 310 x 60 or 310 x 110 mm in vertical skirting

REMARK
NOTE: complete connection must be insulated.

11.1 General design information

MOUNTING DETAIL HOT AIR GRILLE

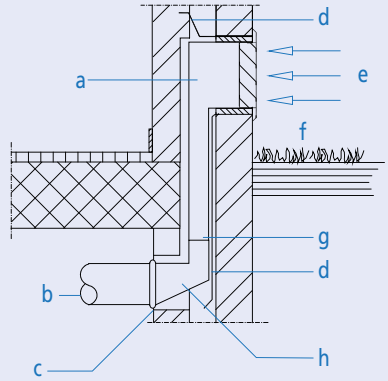


Two hot air grilles directly on duct for bedrooms (detail number 103)

KEY

a	Panel 0.6 mm thick covered on two sides with 15 mm acoustic material. If the air flow rate per grille differs, install the panel proportionally off centre
b	Hot air grille 305 x 57 or 305 x 102 mm

MOUNTING DETAIL HOT AIR GRILLE

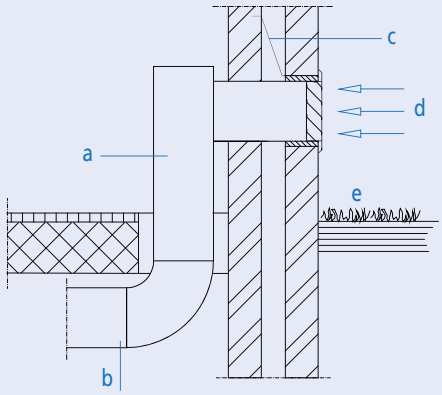


Outdoor air grille (detail number 104)

KEY

a	Square box wall grille
b	Pipe Ø 125 mm
c	Seal
d	Loderite
e	IT 680
f	Ground level
g	Duct to be insulated with vapour barrier
h	Square grille shoe

MOUNTING DETAIL HOT AIR GRILLE



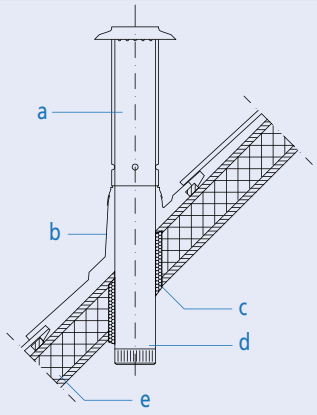
Outdoor air grille (detail number 105)

KEY

a	Duct to be insulated with vapour barrier
b	Return air duct
c	Loderite
d	IT 680
e	Ground level

11.1 General design information

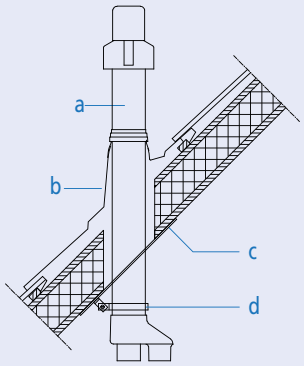
MOUNTING DETAIL ROOF SLEEVE



Roof sleeve ventilation air (detail number 106)

KEY	
a	Ventilation pipe
b	Synthetic tile
c	Insulation foam
d	Insulate pipe with vapour barrier
e	Roof insulation

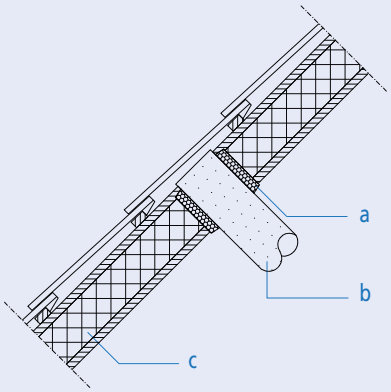
MOUNTING DETAIL FLUE GAS SLEEVE



Flue gas sleeve with clamping bracket (detail number 150)

KEY	
a	Icicle-resistant roof sleeve
b	Synthetic tile
c	Centring plate
d	Clamping bracket

MOUNTING DETAIL MAKE-UP AIR

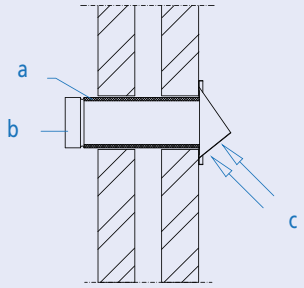


Make-up air through roof (detail number 108)

KEY	
a	Insulation foam
b	Pipe for make-up air (insulate with vapour barrier)
c	Roof insulation

11.1 General design information

MOUNTING DETAIL MAKE-UP AIR

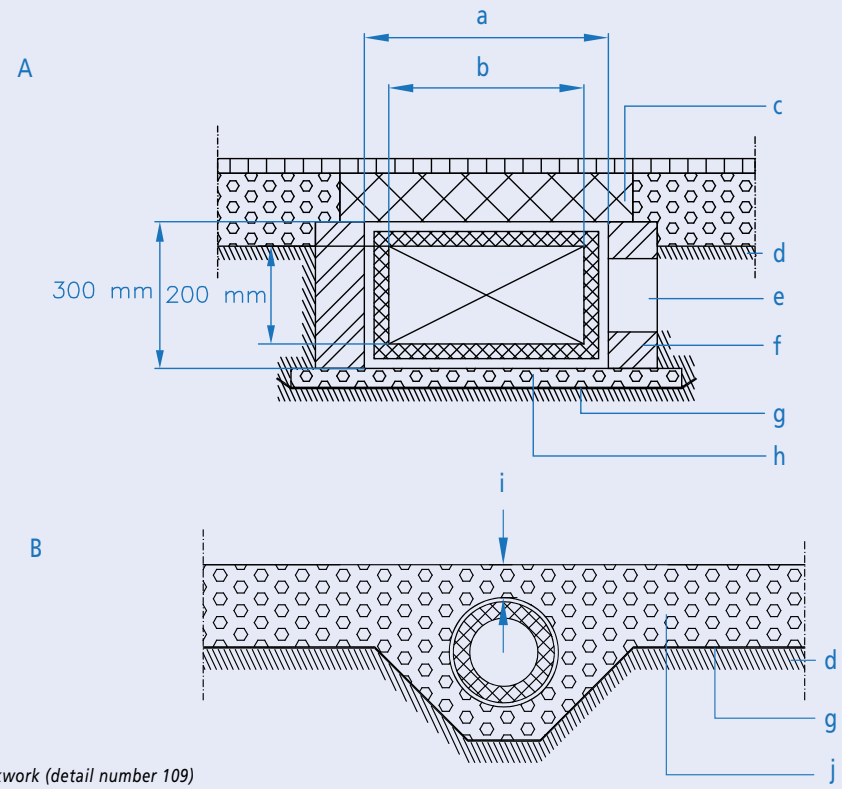


Make-up air through wall (detail number 108B)

KEY

a	Insulation
b	Connect to Renovent (insulate with vapour barrier)
c	Make-up air

DUCTS



Ducts set in brickwork (detail number 109)

KEY

a	Duct size + 100 mm
b	Duct size
c	Concrete slab
d	Sand
e	Opening, if applicable, ø 200 mm for pipe branch D125

KEY

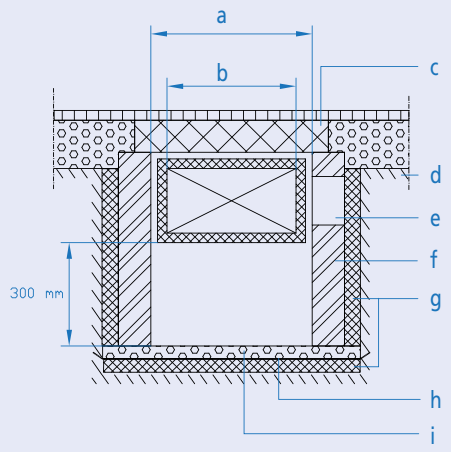
f	Clamp or ½-brick
g	Vapour barrier
h	Bedding + 55 mm concrete
i	At least 60 mm concrete all around
j	Concrete

REMARK

A	Duct insulated with 33 mm 60 mm glass wool or 25 mm Tempex wrapped in PVC film
B	Duct insulated with 33 mm PUR foam (sections) wrapped in PVC film

11.1 General design information

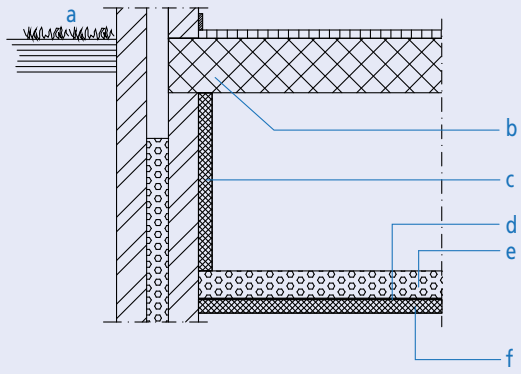
MOUNTING DETAIL WITH RETURN DUCT



Combination supply duct with constructional exhaust duct (detail number 110)

KEY	
a	Duct size + 100 mm
b	Duct size
c	Concrete slab
d	Sand
e	Opening, if applicable, ø 200 mm for pipe branch D125
f	Clamp or ½-brick
g	Insulation rigid foam or similar, minimum thickness 50 mm
h	Vapour barrier
i	Bedding + 55 mm concrete

MOUNTING DETAIL CRAWL SPACE



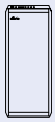
Finished crawl space (detail number 107)

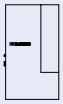
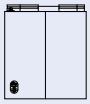
KEY	
a	Ground level
b	Set floor in cement
c	Insulation rigid foam or similar, minimum thickness 50 mm, tin-plate inner leaf
d	PVC film
e	Tamped concrete
f	Insulation rigid foam or similar, minimum thickness 50 mm

REMARK

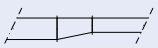
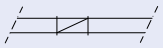
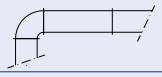
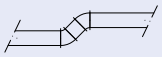
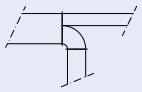
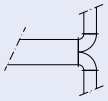
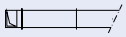
Duct insulated with 33 mm 60 mm glass wool or 25 mm Tempex wrapped in PVC film

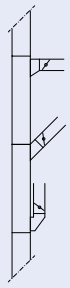
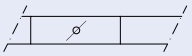
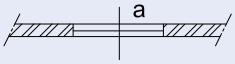
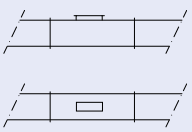
11.1 General design information

DRAWING SYMBOLS		
Description	Drawing symbol	
	Front view	Top view
Allure Upflow		
Allure Downflow		
Elan 10 Upflow		
Elan 10 Downflow		
Elan 10 heating/ cooling		
Elan 25 Upflow		

DRAWING SYMBOLS		
Description	Drawing symbol	
	Front view	Top view
Elan 25 Downflow		
Elan 25 heating/cooling		
Renovent HR Medium and Large		
Renovent HR Small		

11.1 General design information

DRAWING SYMBOLS	
Description	Drawing symbol
Room thermostat	
Rectangular duct	
Horizontal adapter	
Vertical adapter	
Bend 90°	
Horizontal 2 x 45° bend	
Vertical 2 x 45° bend	
Fork	
Fork	
Vertical bend 90° up	
Vertical bend 90° down	
Riser duct	
Drop duct	
Straight grille shoe in wall	

DRAWING SYMBOLS	
Description	Drawing symbol
Straight pipe connection	
45° pipe connection	
Parallel pipe connection	
Square grille shoe in vertical skirting	
Straight grille shoe	
Square grille shoe	
Long grille shoe	
Grille 305 x 57 mm	
Grille 305 x 102 mm	
Floor return grille	
Diffuser in rectangular duct	
Diffuser in round duct	
Wall return grille	
Return under door through slot 18 mm (a-slot)	
Hot air grille directly in duct	

11.2 General information, including general conditions of sale and delivery

DELIVERY CONDITIONS

PRICING

All prices are listed in € and they are exclusive of VAT. This list supersedes all previous catalogues. Basically, these prices are valid until 1 March 2011. Printing errors and interim price changes reserved.

MISCELLANEOUS CONDITIONS

- For carrying out service work on instruction of the installer, the hourly rate amounts to € 57.00 and the costs per kilometre are € 0.44. Callout charge on request.

WARRANTY CONDITIONS

WARRANTY

If, despite the due care given to all products, a guarantee claim must be made, Brink Climate Systems B.V. will be prepared, within the prescribed period and upon presentation of the warranty certificate, to supply replacement parts for any defective parts.

GUARANTEE PERIOD

The warranty period is:

- 2 years from the installation date for all parts of this appliance, with the exception, if applicable, of the supplied filter, for which no guarantee applies;
- 5 years from the installation date for the heat exchanger, if any (with the exception of the enthalpy exchanger for the Advance).

WARRANTY CONDITIONS

The warranty does not cover labour costs and travelling expenses for repairs on-site or for maintenance on the appliance. The warranty is rendered invalid if any faults are the consequence of:

- use of the appliance and/or installation not in accordance with the manufacturer's instructions;
- causes other than defective material or manufacturing;
- inexpert use;
- inadequate or inexpert maintenance;
- use for a higher capacity than rated for the appliance or by installation in a corrosive atmosphere.

Parts will be credited after receipt of the defective parts. For handling, return labels are available that have to be filled in completely. No warranty will be granted if return labels are not or not completely filled in.

11.2 General information, including general conditions of sale and delivery

RETURN SHIPMENTS

WARRANTY RETURNS

Parts returned under warranty must be announced to the Returns Departments for assessment before shipment. Information required on announcement:

- serial number stated on appliance, component and/or service kit;
- name, address and city where the appliance is installed;
- installation date appliance (see warranty card);
- description of the defective product and reason for returning.

Brink will only accept returned goods if they are supplied in undamaged condition, adequately packed and with a completely filled in return label attached.

OTHER RETURNS

- For goods other than those mentioned above which are not returned because of a defect, the order number under which they have been delivered must be stated on announcement. Returns of goods older than 3 months will not be accepted.
- Because of the high handling costs, returns of sheet steel products, such as duct systems, will not be accepted.
- Returns of materials not listed in the catalogue and manufactured according to client's specifications or specifically purchased, will not be accepted.
- For each return shipment 25% of the gross amount will be charged with a minimum of € 50.00.
- For air heaters fixed handling costs apply of € 100.00 and for heat recovery appliances € 50.00, provided that they are returned in undamaged condition and in the original packaging.

11.2 General information, including general conditions of sale and delivery

CONDITIONS OF SALE

These general conditions of sale were deposited in February 2003 at the Zwolle Chamber of Commerce under number 34123000.

ARTICLE 1 APPLICABILITY

1.1 These general conditions apply to all requests, offers and agreements in which Brink Climate Systems B.V. or one of more subsidiaries and/or affiliated companies of Brink Climate Systems B.V. (referred to below as "Brink"), acts or act as a seller of items.

1.2 These conditions can only be deviated from in writing.

1.3 General conditions, under any name, of Brink's other party (referred to below as other party) do not apply.

ARTICLE 2 OFFERS

2.1 Offers by Brink as well as in catalogues and other Brink documents such as prices, dimensions, colours and other specifications, are free of engagement and subject to change, unless the opposite appears from the documents.

2.2 If the other party does not accept an offer from Brink, that party must immediately return the offer and all connected documents to Brink.

2.3 Brink has the right to charge the costs involved in (preparing) an offer to the other party, provided that Brink has informed the other party about that in writing in advance.

ARTICLE 3 AGREEMENTS

3.1 If the other party places a written in order with reference to an irrevocable offer by Brink, the agreement is concluded at the moment Brink receives the order.

3.2 If a written order from the other party is not preceded by an offer by Brink, or if an order follows an offer free of engagement by Brink, the agreement is concluded at the moment that, either Brink sends the written confirmation of order, or Brink starts performance of the agreement.

3.3 If and in so far the procedure as referred to in paragraphs 1 and 2 of this article takes place through EDI (Electronic Data Interchange) or fax, the EDI and fax messages are considered equivalent to written documents.

ARTICLE 4 PRICES

4.1 Prices are in Euro, exclusive of VAT and based on the delivery conditions described in article 5 paragraph 2.

4.2 If after conclusion of the agreement, but prior to delivery, one or more price-determining factors such as purchase prices, materials or parts prices, wages, levies, taxes, rates of exchange etc., should rise, Brink has the right to adapt the selling prices accordingly.

4.3 Brink will notify the other party as soon as possible in writing about the adapted prices in accordance with paragraph 2 of this article.

4.4 If the price increase is more than 10% of the original price, the other party has the right to dissolve the agreement in writing within 7 days after receipt of said notification, unless that would be evidently unreasonable in view of the circumstances. Dissolution on the basis of this paragraph does not give either party right to any compensation for losses.

ARTICLE 5 DELIVERY

5.1 The delivery conditions will be interpreted in accordance with the "Incoterms", edition 2000, published by the International Chamber of Commerce in Paris.

5.2 Delivery takes place "ex works", unless agreed differently.

5.3 In no event will agreed delivery periods be considered firm dates.

5.4 Brink will do everything reasonably possible to realise delivery within the agreed delivery period. As soon as Brink is aware of facts and/or circumstances that will make delivery within the agreed delivery period impossible, Brink informs the other party about that as soon as possible, stating the expected new delivery period.

5.5 If the hindrance to the performance described in the previous paragraph continues for longer than 3 months after the originally agreed delivery period, the other party has the right to dissolve the agreement by registered letter without parties being mutually liable for any compensation for losses.

5.6 If, for the performance of the agreement, Brink requires information and/or documents from the other party and/or third parties, or certain formalities have to be fulfilled, the delivery period only starts at the moment all information and/or documents are in the possession Brink and/or all formalities have been fulfilled.

11.2 General information, including general conditions of sale and delivery

5.7 Brink has the right to make partial deliveries.
5.8 If the other party does not take delivery of the items at the agreed moment, the risk regarding the items is transferred from Brink to the other party at the moment the other party is in default and Brink will store and insure the items during a reasonable period, all this for the account and risk of the other party.

ARTICLE 6 TITLE
6.1 Title to the items is only transferred from Brink to the other party after the other party has paid the purchase price and all that the other party owes to Brink under any purchase agreement as well as under a claim for failure in the performance of any such agreement.
6.2 It is not permitted for the other party to alienate, to encumber, or to create any rights less than ownership with regard to items delivered to the other party by Brink under retention of title, or to dispose of those in any other way in violation of the retention of title, other than in the framework of regular business operations.
6.3 If the other party fails in the performance of its obligations pursuant to the agreement, the other party is legally in default and - without prejudice to the provisions of article 14 - Brink has the right to take back all items under retention of title without further notice of default. The other party will give Brink the opportunity to do so and allow Brink access to the site or sites where the items are located.

ARTICLE 7 PAYMENT
7.1 At Brink's discretion, payment will take place cash on delivery or within 30 days after delivery.
7.2 Payments made by the other party shall first be set off against costs and interest due, and subsequently against payable invoices that have been outstanding for the longest period, even if the other party states that the payment refers to a more recent invoice.
7.3 In the event of overdue payment, the other party will legally be in default without any further notice of default being required and the other party shall pay the legal interest increased by 2% over the amount due for the duration of the default.
7.4 All judicial and extrajudicial costs incurred by Brink for the recovery of its claim(s) against the other party, are fully for the account of the other party. The extrajudicial costs are set at 15% of the outstanding sum with a minimum of € 250.00.
7.5 Brink has the right in cases to be determined by Brink for security of the performance of the other party's obligations under the agreement:
- to only supply items cash on delivery;
- to require full or partial payment in advance;
- to demand that the other party has an irrevocable and unconditional bank guarantee issued by a credit institution acceptable to Brink.

7.6 The costs incurred in connection with the provisions of paragraph 5 of this article are for the account of the other party.
7.7 It is not permitted for the other party to set off claims it has on Brink against claims Brink has on the other party.

ARTICLE 8 MEANS
8.1 The estimates, catalogues, images, drawings, specifications and other documents made available by Brink to the other party, as well as all models, moulds, dies, punches, tools and other means Brink uses for the performance of the agreement, including the means Brink purchases or produces specially for the delivery to the other party, will at all times remain Brink's property.
8.2 The other party undertakes, for its own account, with regard to documents and means made available to it:
- to mark those as recognisable property of Brink;
- to keep them in proper condition;
- to ensure them against all risk as long as the other party holds those means;
- to make them available to Brink at the first request.

8.3 Without Brink's previous written permission it is not permitted for the other party to multiply, copy, disclose or make available to third parties said documents and means, or to use them or have them used in any other way for the benefit of third parties or to hand them over to third parties for security or otherwise.

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ARTICLE 9 ASSIGNMENT OF RIGHTS AND OBLIGATIONS

Brink reserves the right to wholly or partly contract out its obligations for the performance of the agreement to third parties.

ARTICLE 10 INDUSTRIAL INTELLECTUAL PROPERTY

10.1 If the other party has prescribed a certain design, material type or method, the other party shall safeguard Brink from third-party rights to such a design, material type or method and indemnify any losses Brink and/or third parties might suffer as a consequence.

10.2 Brink reserves all intellectual and industrial property rights with regard to supplied items - also if those have been developed in cooperation with the other party - and with regard to the documents and tools described in article 8 paragraph 1.

10.3 On Brink's first request the other party shall render its corporation in formalities required to established and/or enforce the property rights referred to in the previous paragraph on behalf of Brink.

ARTICLE 11 CONFIDENTIALITY

11.1 The other party guarantees confidentiality towards third parties with regard to all corporate information received from Brink that has been disclosed to it in any way.

11.2 Items created on the basis of joint developments between Brink and the other party cannot be used for third-party purposes without the previous written permission from Brink.

ARTICLE 12 WARRANTY

12.1 Brink warrants that supplied items or parts thereof are free of defects directly resulting from material, manufacturing and/or design faults during a period of 12 months after delivery.

12.2 In deviation of the provision of paragraph 1 of this article, the warranty for items Brink has acquired from third parties or that have been developed and/or manufactured by third parties, remains limited to the warranty Brink can obtain from such third parties.

12.3 Brink will only consider warranty claims that have been submitted to Brink in writing within 14 days after the defect has been established, or within 14 days after the defect could reasonably have been established.

12.4 All warranty claims lapse in case:

- without Brink's previous permission the other party itself has modified or repaired the supplied items or has had third parties modify or repair them;
- of inexpert use and/or use for other purposes than the original, regular purpose;
- the assembly instructions or user manual has not strictly been observed;
- other parts than the original - and supplied - Brink parts have been used on assembly;
- the defect is the consequences of other causes than material, manufacturing and/or structural faults;
- delivery of used (2nd-hand) materials, parts or items has been agreed;
- the other party fails in the performance of its obligations under the agreement;
- the other party has supplied or prescribed designs, materials and methods;
- there has been no, incorrect or insufficient maintenance;
- the defect is the result of regular wear and tear.

12.5 Minor deviations in dimension, colour, weight or number are no ground for a warranty claim.

12.6 Brink is in no event liable for costs of repairs to the supplied items that the other party has carried out or has had third parties carry out without Brink's previous permission.

12.7 Pursuant to its warranty obligations, Brink is exclusively obliged to repair or replace for its account items or parts thereof supplied by Brink in the Netherlands. Brink reserves the right to charge the other party for additional expenses, including hotel and travelling expenses, wages and costs of shipment and disassembly and assembly.

12.8 If for the performance of the warranty obligations Brink resupplies items or parts thereof, the replaced items become the property of Brink at the moment of replacement.

12.9 Return shipments are only accepted after previous written permission from Brink. Return shipments take place for the other party's account and risk.

ARTICLE 13 LIABILITY

13.1 Brink is exclusively liable for damage on the part of the other party and/or third parties if and in so far as the damage is the direct and immediate consequence of the performance of the agreement by Brink.

13.2 Brink is in no event liable towards the other party and/or third parties for any kind of consequential damage, including (but not limited to) loss of profit or income, other losses including production loss, costs of stoppage or delays, penalties or discounts and all payments to third parties.

13.3 Brink's liability under this article remains limited to the amount for

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which Brink has insurance coverage, unless the other party can demonstrate that the damage is the consequence of wrongful act, gross negligence or intent on the part of Brink.
13.4 The other party safeguards Brink from third-party claims for damages for which Brink is not liable on the basis of the previous paragraphs of this article.
13.5 As soon as possible, the other party will notify Brink in writing about any claims for damages as described in this article.

ARTICLE 14 DISSOLUTION
14.1 In the event of failure by the other party to perform its obligations under the agreement or agreements resulting from it, as well as in the event of its involuntary dissolution, suspension of payment (or petition to that effect) and in the event of stoppage, liquidation or takeover or any comparable state of the other party's enterprise, the other party is legally in default. In such a case Brink has the right, without notice of default and without judicial intervention, to unilaterally wholly or partly dissolve the agreement by means of a registered letter to the other party and/or to suspend its obligations under the agreement, without Brink being liable for any damages and without prejudice to Brink's other rights, including the right to full damages.
14.2 All claims that Brink may have or get in these cases will become immediately and fully payable.

ARTICLE 15 APPLICABLE LAW, DISPUTES
15.1 This agreement and all agreements that may result from it are governed exclusively by Dutch law. The United Nations Convention on International Sale of Goods (known as the Vienna Sales Convention 1980) does not apply to said agreements.
15.2 All disputes (including those considered as such by one party only) that may arise between parties with regard to this agreement or agreements resulting from it, will at Brink's discretion be submitted either to the judgement of arbitrators, appointed and deciding in accordance with the regulations of the Netherlands Arbitration Institute (N.A.I.) in Rotterdam, or submitted to the competent court in the Zwolle district.
15.3 Arbitration will take place as follows:
- the arbitration tribunal consists of three arbitrators;
- arbitration takes place in Zwolle;
- the proceedings are conducted in the Dutch language.

ARTICLE 16 FINAL PROVISIONS
16.1 If and in so far the agreement (also) includes carrying out installation and/or assembly works by Brink, the performance of those works is covered by the General Terms of Contracting Installing Companies (ALIB '92), with the exclusion of these conditions of sale.
16.2 These general terms were originally drawn up in the Dutch language. In the event of ambiguity and/or differences in interpretation with a translated version of these conditions, the Dutch text will in all cases prevail.

Edition February 2003

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Heat Recovery Systems

www.flynnheatrecovery.com

Tel: 057 9336999
Mob: 087 6427830
Email: info@flynnheatrecovery.com
Web: www.flynnheatrecovery.com